

The leafhopper genus *Batracomorphus* (Cicadellidae, Iassinae) in the eastern Oriental and Australian regions



W. J. Knight

Department of Entomology, British Museum (Natural History), Cromwell Road, London SW7 5BD

Contents

Synopsis.....	27
Introduction	27
Historical review	29
Abbreviations of depositories	30
Acknowledgements	30
Remarks	30
<i>Batracomorphus</i> Lewis	30
Morphology and species-groups.....	31
Biology	33
Distribution	34
Techniques and methods.....	36
Key to eastern Oriental and Australian species of <i>Batracomorphus</i> (males only) ...	37
Nomina dubia.....	205
Nomen nudum.....	206
References	206
Index.....	208

Synopsis

The Old World Iassine genus *Batracomorphus* Lewis is revised for the eastern Oriental and Australian regions and characters are given for its separation from the other genus of the tribe in this area. Descriptions are given of the males of each of the 188 known species, of which 161 are new, and a key is provided for their separation. The morphological variability, distribution and biology of the group in the area are discussed. Three new generic synonymies, three new specific synonymies and 18 new combinations are established, and one species and one genus raised from synonymy. A replacement name is provided for a junior secondary homonym. One lectotype is designated and 25 nomina dubia and one nomen nudum listed.

Introduction

The Cicadellidae is the largest family in the Homoptera, the 11,000 or more known species exceeding the combined total for the related groups Aphidoidea, Psylloidea and Aleyrodoidea. Unlike the Aphidoidea, which are mainly temperate, the Cicadellidae attains its maximum development and diversity in the tropics, resembling in this respect both the Psylloidea and Aleyrodoidea. As in these other groups, the species feed by sucking plant sap from the xylem, phloem or mesophyll cells and inflict damage to the host plant either directly or by the transmission of virus or virus-like diseases. Their economic importance as virus vectors is becoming increasingly recognised and a full account of the known vector species, diseases and host plants is given by Nielson (1968) and Maramorosch & Harris (1979). At the present time the Cicadellid fauna of the tropics is relatively little known and much basic taxonomy on the family is still to be carried out.

There are two characteristic features of most studies on Cicadellidae. Firstly, most species are

recognised almost solely by features of the male genitalia. Females are relatively uniform in structure and specific morphological characters are absent or indiscernible in most cases. This dependence upon the male genitalia for species delineation makes it difficult to fully assess evolutionary relationships between taxa at the species level. Thus evolutionary based studies, such as zoogeography, in individual genera can only be of limited value.

The other characteristic feature of studies on the Cicadellidae is the paucity of biological data, a phenomenon remarkable in a phytophagous group of this size and economic importance. This traditional reliance upon morphological characters appears to be due at least partly to the habits of the species themselves. Unlike the immatures of the Aphidoidea, Psylloidea and Aleyrodoidea, which are either sessile or relatively sedentary, Cicadellidae nymphs are very active and less easily observed or collected in direct association with the host-plant. The inability also to identify the nymphs and the difficulty of associating them with known adults either directly or by rearing are additional factors which further impede the accumulation of biological data. As a result, host plant relationships of most groups within the family are recorded only as broad generalisations. The Typhlocybinae, Macropsinae and Iassinae, for example, are mainly arboreal whilst the Deltocephalinae and Agallinae are mainly associated with grasses and herbaceous plants. In Australia the Eurymelinae, Ledrinae, Austroagalloidinae and Tartessinae, together with the Iassine tribes Trocnadini and Reuplemmelini, are recorded as feeding mainly or exclusively on eucalypts whilst in North America and Europe the Idiocerinae are associated mainly with poplars and willows. The Ulopine tribe Cephalelini occurs exclusively on rushes of the family Restionaceae. On the rare occasion when specific host-plants are recorded no distinction is made between feeding, oviposition or resting hosts.

From the limited studies that have been carried out on such groups as the Macropsinae and Idiocerinae, the species are known to be restricted to single hosts or a small range of plant species. Field rearing and collecting carried out by Hepner at Mississippi State University in North America on the Typhlocybinae genus *Erythroneura* Fitch has shown that, for oviposition, the species are restricted to woody plants and that many are host specific as well as having distinct spring and autumn food plants and summer oviposition hosts (Hepner, 1966–1978). Work by Claridge & Reynolds (1972) and Claridge, Reynolds & Wilson (1977) has also shown that the British species of tree-feeding *Oncopsis* Burmeister (Macropsinae) are all highly host specific in feeding and in particular in oviposition. Further work by Claridge & Wilson (1976) on the Typhlocybinae of woodland canopy in Great Britain has shown that most species of this subfamily have very restricted host plant associations and that many are monophagous. Later work (Claridge & Wilson, 1978a; 1978b) has demonstrated seasonal changes in oviposition preferences and host plant range in two bivoltine tree-feeding Typhlocybines, comparable to the host alternation of aphids.

The biological complexity of the Cicadellidae, as indicated by these pioneer studies, emphasises the importance of biological data in this family, not only as an aid to understanding phylogenetic relationships but more immediately as a means to interpreting morphological differences. The host-plant studies by Ross (1957) and Hepner (1966a), for example, reveal that in *Erythroneura* several taxa considered earlier to be single variable species proved to be a number of related species each with a very limited host range. The variability encountered in several Pacific species of *Batracomorphus*, as well as that recorded by Linnavuori & Quartau (1975) for some of the African ones, may possibly be due to the same phenomenon. Likewise the numerous *Batracomorphus* species occurring together in certain rain forest localities may be evidence of close host specificity, or simply attraction to a single species of food plant as discovered by Hepner (1976) for *Erythroneura* where 100 different species were taken from a single plant of *Ilex decidua*.

Biological studies in general require a sound taxonomic base of the kind available in Europe and North America. Such a base does not exist for tropical Cicadellidae at the present time. The present study, which is part of a larger one by the author of the family in the eastern Oriental and Australian regions, is a first step therefore in our understanding of one of the most commonly occurring and most variable of arboreal genera in the tropics of South East Asia. Although lacking the necessary biological data for full interpretation of the variability and distribution of

many of the species, the present work serves to highlight such problems and direct attention to where it is most needed. The study, and others like it such as those by Nielson (1975; 1977; 1982) on the Coelidiinae and Evans (1981) on the Tartessinae, will hopefully also provide the assistance and impetus for much needed biological studies in the tropics for comparison with those already carried out in the temperate regions of the world. It serves also as a comparison with the known African fauna and together with current work on that of the Indian subcontinent by Dr C. A. Viraktamath (pers. comm.) extends our knowledge of the genus throughout its range.

Batracomorphus is a large and predominantly tropical group of Iassine leafhoppers restricted to the Old World. Evans (1972) testified to the abundance of species in the Oriental region whilst Linnavuori & Quartau (1975) recorded 103 species for the Afrotropical region of which all but six were tropical. Quartau (1981*b*) later described a further 18 species from Africa of which 15 were tropical. Nast (1972) lists only 21 species for the whole of the Palaearctic region. The possible occurrence of the genus in the New World, as suggested by Linnavuori (1957; 1960*a* 1960*b*) and Kramer (1963), has been refuted by the more recent work of Blocker (1979).

The subfamily Iassinae itself comprises six tribes of which the Iassini is world-wide, the Platyjassini is confined to Madagascar, the Hyalojassini to South East Asia, the Reuplemmelini to Australia and New Guinea, the Trocnadini to Australia and the Selenomorphini to New Caledonia. Descriptions of the subfamily are given by Linnavuori & Quartau (1975) and Blocker (1979) in their revisions of the Afrotropical and Western Hemisphere species respectively, and Evans (1972; 1974) discusses the subfamily in the Oriental and Australian regions and gives a key to the tribes.

Only one other genus of the Iassini is known to occur in the eastern Oriental and Australian regions, namely *Thalattoscopus* Kirkaldy **gen. rev.** (type-species *T. dryas* Kirkaldy). The latter was synonymised with *Batracomorphus* by Linnavuori & Quartau (1975) but is here revived as a distinct genus with *Marquardtella* Schmidt **syn. n.** (type-species *M. krusei* Schmidt) as a new synonym. It occurs in Ceram, Mysol, New Guinea, Bismark Archipelago, Solomon Islands and Australia and may be distinguished from *Batracomorphus* by the spatulate and spinose subgenital plates.

Historical review

The first record of species of *Batracomorphus* in the Pacific area was by Walker (1870) who described *Bythoscopus unicolor* from Sulawesi and *Iassus coriaceus* from Mysol from material collected by A. R. Wallace. In the same year, Stål (1870) in a study of the Hemiptera of the Philippines described the first for that group of islands. It was not until 30 years later that the next species was described, by Kirby (1900) in a monograph of Christmas Island in the Indian Ocean.

The first major work on the leafhoppers of the Pacific was by Kirkaldy (1906) who described a new genus *Eurinoscopus* for seven new species from Australia. In a supplement to this work (Kirkaldy, 1907) he described an eighth species from Fiji. The synonymy between Kirkaldy's genus and *Batracomorphus* was first noted by Linnavuori (1957).

During the next two decades only four additional species were described from the Pacific area, from Australia (Distant, 1908*a*), the Bonin Islands (Matsumura, 1912), New Caledonia (Distant, 1920) and Buru (Schmidt, 1926). Eight years later Osborn (1934*a*), in *Insects of Samoa*, described a further five species and in the same year (Osborn, 1934*b*) three additional species from the Marquesas Islands. Further information on the Australian leafhoppers was provided by the many papers of J. W. Evans from 1931 to the present time. In 1935 he described two species of *Eurinoscopus* from Australia and two from Tasmania and a few years later two more from Australia (Evans, 1940 and 1941 respectively). Metcalf (1946), in a study of the leafhoppers of Guam, described two species whilst Linnavuori (1956), in a revision of some of Stål's and Spangberg's cicadellid types, described one from Sumatra.

The first extensive survey of the leafhoppers of the Pacific area was made by Linnavuori (1960*a*) who described a species from Kusaie and another from Palau. He recognised the similarity between *Batracomorphus* and Kirkaldy's genus *Eurinoscopus* and thereby drew the

attention of all subsequent workers to the presence of *Batracomorphus* in the Pacific area. In 1964 Blöte described seven species from New Guinea and two years later Evans (1966), in a monograph on the leafhoppers of Australia and New Zealand, described the first from New Zealand. The most recent contribution to our knowledge of the genus in the Pacific was also by Evans (1972) who described six more species from the Australian region. In the same work he described two new monotypic genera, *Acojassus* and *Edijassus*, as well as five additional species of *Batracomorphus* from New Guinea which belong to *Thalattoscopus*.

Abbreviations of depositories

The specimens studied in the course of this revision are deposited in the following institutions whose names are abbreviated in the text as follows:

AM	The Australian Museum, Sydney, Australia.
AMNH	American Museum of Natural History, New York, U.S.A.
BMNH	British Museum (Natural History), London, United Kingdom.
BPBM	Bernice P. Bishop Museum, Honolulu, Hawaii, U.S.A.
DSIR	Department of Scientific and Industrial Research, Auckland, New Zealand.
EIHU	Entomological Institute, Hokkaido University, Sapporo, Japan.
FMNH	Field Museum of Natural History, Chicago, U.S.A.
ITZ	Instituut voor Taxonomische Zoölogie, Amsterdam, Netherlands.
MM	Moravské Museum, Brno, Czechoslovakia.
MNHN	Muséum National d'Histoire Naturelle, Paris, France.
NCSU	North Carolina State University, Raleigh, U.S.A.
NR	Naturhistoriska Riksmuseet, Stockholm, Sweden.
QM	Queensland Museum, Brisbane, Australia.
RNH	Rijksmuseum van Natuurlijke Historie, Leiden, Netherlands.
SAM	The South Australian Museum, Adelaide, Australia.
UQ	University of Queensland, Brisbane, Australia.
USNM	[U.S. National Museum] National Museum of Natural History, Washington, D.C., U.S.A.
WADA	Department of Agriculture, Perth, Australia.
ZM	Zoologisk Museum, Copenhagen, Denmark.

Acknowledgements

My sincere thanks are due to the following people for the loan of material in their care: Dr M. Boulard, MNHN; Mr E. C. Dahms, QM; Dr L. L. Deitz, DSIR; Dr P. H. van Doesburg, RNH; Dr J. P. Duffels, ITZ; Dr G. F. Gross, SAM; Mr G. A. Holloway, AM; Dr J. P. Kramer, USNM; Dr P. Lauterer, MM; Dr Per Lindskog, NR; Dr G. B. Monteith, UQ; Dr G. M. Nishida, BPBM; Dr B. Petersen, ZM; Mr K. T. Richards, WADA; Dr R. T. Schuh, AMNH; Dr E. H. Smith, FMNH; Dr M. Suwa, EIHU; Dr D. A. Young, NCSU. I would also like to thank Dr U. Göllner-Scheiding for information on the types deposited in the Museum für Naturkunde der Humboldt-Universität, Berlin, D.D.R.

Remarks

The general absence of external distinguishing characters for species separation, and the fact that several species often occur in the same locality, make it impossible to associate males and females with confidence. For this reason the females have been omitted from the present study. Where associations have been made under 'Material examined' they are to be considered as tentative only.

BATRACOMORPHUS Lewis

Batracomorphus Lewis, 1834: 51. Type-species: *Batracomorphus irroratus* Lewis, by monotypy.
Eurinoscopus Kirkaldy, 1906: 346. Type-species: *Eurinoscopus lentiginosus* Kirkaldy, by original designation.
Ossana Distant, 1914: 518. Type-species: *Ossana bicolor* Distant, by original designation.

Acojassus Evans, 1972: 656. Type-species: *Acojassus montanus* Evans, by original designation. **Syn. n.**
Edijassus Evans, 1972: 656. Type-species: *Edijassus pallidus* Evans, by original designation. **Syn. n.**

Short, robust, wedge-shaped, slightly pubescent, length 3.50–9.25 mm. Colour stramineous, sometimes speckled with dark brown spots.

Head slightly narrower than pronotum, rarely equal to or wider than. Vertex short, transversely striate; length uniform, rarely slightly longer medially; anterior margin broadly rounded in dorsal aspect; slightly declivous in line with pronotum, continuously curved to face in lateral aspect or with dorsal area flattened. Face short, broad; maxillary plates wide, lateral margins sinuate. Lora widely separated from margin. Frontoclypeus broad, approximately circular in outline, laterofrontal sutures terminating just above antennal ledges. Clypellus distinct, short, broad, sides parallel. Antennae near posterior margin of eyes. Antennal ledges prominent, transverse or slightly oblique, extending onto frontoclypeus. Antennal pits deep. Ocelli distinct, near anterior margin of face, each approximately midway between midline and corresponding eye. Pronotum longer than vertex, slightly declivous anteriorly, increasing in width posteriorly, rarely parallel-sided; lateral margins long, strongly carinate; posterior margin shallowly concave; transversely striate. Scutellum long. Forewings long, exceeding abdomen, semi-coriaceous with appendix and first apical cell membranous, weakly punctate, rarely with small tubercles; appendix wide; vein separating appendix and first apical cell complete throughout its length; three subapical cells, closed basally. Setal formula of femora III: 2.2.1.

Male genitalia with pygophore longer than wide, emarginate dorsally to near midlength; lateral lobes broadly or narrowly rounded posteriorly, short spine-like setae over posterior half; posteriorly directed process medially on ventral margin, rarely absent. Tenth segment membranous. Valve small, fused to pygophore. Subgenital plates long, slender, triangular, extending to apex of pygophore, with short basal stem, the latter sometimes small or obscure; long hair-like setae usually arranged as a dorsolateral group at base, a short uniseriate row on dorsolateral margin and a multiseriate row on ventral margin extending also over medial surface of plate, the dorsolateral or ventral rows sometimes absent, plates sometimes densely setose. Eighth sternite longer than preceding ones and covering basal half of genital capsule. Styles with apical process elongate, terminating in a small dorsally directed hook and with a ventral subapical expansion sometimes present; lateral lobe well developed; basal arm very short. Connective Y-shaped, the arms linked to each other dorsally and ventrally by plate-like extensions; articulated to aedeagus. Aedeagus with shaft directed dorsally; gonopore usually long and extending over distal half of posterior margin of shaft, sometimes short; a longitudinal incision on anterior margin of shaft ('anterior incision') approximately same length as gonopore usually present; processes rarely present.

Morphology and species-groups

Batracomorphus has proliferated freely in both the Afrotropical and Oriental regions and over 300 species have been recorded from the Old World tropics, its centre of origin. Throughout its evolution the external facies of the group have remained remarkably constant and little affected by natural selection which has had its major effect upon the male genitalia. The variation shown by these structures, however, and the absence of any correlation between characters in this respect, precludes the demarcation of major species-groups of any evolutionary significance within the South East Asia Pacific area.

The most variable structures throughout the genus, of major importance for species recognition, are the pygophore processes. The simplest form in South East Asia and the Pacific is long and slender. Modification takes place either by the development of a subapical spur of varying shape and size (Figs 463, 546), culminating in forms with a bifid apex, or alternatively by the development of variously shaped lamellate expansions (Figs 178, 248, 308, 400). Reduction of the processes, culminating in their complete absence as in the type-species, is rare amongst Pacific species.

In contrast to the pygophore processes the styles and aedeagus are constant in shape in large numbers of species and are of more limited taxonomic value. In the majority of species the elongate apical process of the style increases in width towards its posterior end, narrowing subapically from the ventral margin to terminate in a dorsal medially curved finger-like apex (Fig. 5). The principal modification is the development of a lamellate expansion subapically on the ventral margin, usually small and triangular (Figs 122, 143) or in some cases spine-like and ventrally directed giving a bifid appearance to the apex (Figs 114, 134). Less frequent changes also occur in the more basal part of the process which is either abruptly narrowed distally,

creating a distinct apical neck (Figs 114, 191), or of uniform width throughout its length and sometimes strongly attenuated (Figs 116, 179, 185, 304).

The connective, referred to as Y-shaped, consists of a posterior shaft expanded anteriorly into an approximate hemisphere, the dorsal and ventral walls of which are shallowly or deeply concave from the anterior end. The relative length of the shaft, compared with the anterior arms, varies from long to short but is of limited taxonomic value.

The aedeagus shows little variation in the majority of species apart from slight differences in its relative width (Figs 6, 7, 193, 194) and the relative lengths of the gonopore and anterior incision. Modifications of the basic shape take several forms, each either unique as in *daedalus* or occurring in several closely related species as in *procne*, *chlorophana*, *evander* and *silvanus*. The shaft may be very slender and markedly recurved anteriorly (Fig. 328). The basal part of the aedeagus may be extended ventrally (Figs 222, 289) or enlarged in proportion to the shaft (Figs 741, 755) whilst the aedeagus as a whole may be shortened and robust with the reduction or loss of the basal apodeme (Figs 859, 897). The gonopore may be reduced in length and confined to the distal region of the shaft (Figs 181, 412, 846, 904) whilst the anterior incision may be likewise reduced and sometimes absent (Figs 182, 315, 412, 764, 791, 823, 894). Lateral lamellate expansions sometimes occur on the shaft, either apically or along its length (Figs 358, 363) and paired processes may be developed either basally (Fig. 417) or apically (Figs 784, 818, 884) on the shaft. Small tubercles sometimes occur on the lateral margin of the gonopore (Figs 269, 386).

Although major species-groups are absent, some species show sufficient similarity to others in one or more characters to indicate close relationships. Five such groups are recognisable, the characteristics of which are mentioned in the species descriptions under the first species in each group.

1. *pictus*-group (New Guinea, New Britain)
pictus, *theseus*, *cheesmanae*, *crossus*
2. *procne*-group (Micronesia, Formosa, Philippines, Borneo, West Malaysia, Java, Sumatra, Samoa, Marquesas Islands, Burma, India, Sri Lanka, Africa)
procne, *chlorophana*, *evander*, *silvanus*
3. *teucer*-group (Philippines, Borneo, West Malaysia)
teucer, *harpalyce*, *ascanius*
4. *otus*-group (West Malaysia)
otus, *melampus*, *hector*
5. *proserpine*-group (Borneo, West Malaysia, Sumatra)
proserpine, *coeus*, *thalia*, *triton*

Like the external facies the subgenital plates, as illustrated in Figs 467 and 468, are one of the least variable characters within the genus. Modifications of the subgenital plates are relatively minor and occur in only a few species. They involve either the loss of the dorsal (Fig. 901) or ventral (Figs 719, 720) row of setae, with the occasional reduction or loss of the basal stem (Figs 739, 740, 901) in each group, or the development of a dense growth of long hair-like setae accompanied by the loss of the basal stem (Figs 921, 928, 936, 972). The 'reduction' or 'loss' of the stem appears to be due to the basal extension of the lateral lobe or the lateral expansion of the stem itself which is still visible in outline within the basal tissue of the plate. These modifications are correlated with variations in the styles, aedeagus and vertex and the species concerned may be grouped accordingly, the final groupings in each case being based on similarities in the aedeagus, styles and pygophore processes.

- I. Subgenital plates without ventral setae; vertex flattened (except in *diomede*)
 - A. Basal stem normal (New Guinea)
 1. *montanus*, *leda*, *viridinervis*
 2. *geryon*
 - B. Basal stem reduced (Australia, New Guinea, New Britain, Borneo)
 1. *lavinia*, *sabinus*, *menelaus*, *othrys*, *pallas*, *zeus*, *diomede*, *samii*

C. Basal stem absent (Philippines, Borneo, New Guinea, Bismark Archipelago, Solomon Islands)

1. *aceses*, *thetis*, *tityos*, *misenus*, *pustulatus*, *alceus*, *antenor*, *orithyia*, *tereus*, *ufens*
2. *cycnus* (Philippines)

II. Subgenital plates without dorsal setae except for basal group; vertex flattened or rounded.

A. Basal stem normal; vertex flattened

1. *iulus*, *anchises*, *alcides*, *palinurus*, *vesta*, *janus*, *eumenides* (Java, West Malaysia, Borneo, Philippines, Sulawesi)
2. *nereus*, *tullus*, *brooksi*, *ogasawarensis* (Australia, Philippines, Bonin Islands)
3. *cyprian*, *adrastus*, *laodamia* (Philippines, Borneo)

B. Basal stem reduced; vertex rounded

1. *dymas*, *remus*, *lentiginosus* (New Guinea, Australia)

III. Subgenital plates densely pubescent, basal stem absent; vertex flattened (except in *briseis*) (New Guinea, New Britain)

1. *thestor*, *leto*
2. *boschmai*, *semele*, *nitens*, *hermes*, *xanthus*, *briseis*, *artemis*, *iris*
3. *telamon*, *enyo*

All modifications of the genitalia are clearly derived from the more primitive condition prevailing in the majority of species. The heterogeneous nature of each of the three principal groups outlined above, however, suggests that the loss of setae and basal stem or the acquisition of a dense pubescence has occurred independently on several different occasions and that the groups themselves have little or no evolutionary significance. This is particularly so in the third group which shows differences between the subgroups in the distribution pattern of the setae themselves.

Biology

The species of *Batracomorphus* are mainly arboreal although some also occur on shrubs, herbaceous plants and grasses. The host-plant data given for the African species by Linnavuori & Quartau (1975) and Quartau (1981b) are limited mainly to forest types rather than specific host-plants. The latter are listed for 10 species by Quartau (1981a) indicating a preference for *Acacia* (Leguminosae) with other hosts in the families Combretaceae, Anacardiaceae and Compositae. No species of the genus or the subfamily have been associated with virus or disease transmission.

The biology of the South East Asia Pacific species is unknown apart from isolated records of host-plants for a few species which do not reveal any significant pattern. These records, together with the data available from present material, are listed below.

Species	Host-plant	Family*	Location	Reference
<i>adventitiosus</i>	<i>Casuarina</i> sp.	Casuarinaceae	New Hebrides	**
<i>adventitiosus</i>	<i>Coprosma parviflora</i>	Rubiaceae	New Zealand	Knight (1974)
<i>adventitiosus</i>	<i>C. robusta</i>	Rubiaceae	New Zealand	Knight (1974)
<i>adventitiosus</i>	<i>Hoheria glabrata</i>	Malvaceae	New Zealand	Knight (1974)
<i>adventitiosus</i>	<i>Juncus</i> sp.	Juncaceae	New Zealand	Knight (1974)
<i>adventitiosus</i>	<i>Leptospermum ericoides</i>	Myrtaceae	New Zealand	Knight (1974)
<i>adventitiosus</i>	<i>L. scoparium</i>	Myrtaceae	New Zealand	Knight (1974)
<i>adventitiosus</i>	<i>Muehlenbeckia</i> sp.	Polygonaceae	New Zealand	Knight (1974)
<i>adventitiosus</i>	<i>Nothofagus solandri</i>	Fagaceae	New Zealand	Knight (1974)
<i>adventitiosus</i>	<i>Plagianthus betulinus</i>	Malvaceae	New Zealand	Knight (1974)
<i>adventitiosus</i>	<i>P. divaricatus</i>	Malvaceae	New Zealand	Knight (1974)

* Compiled from *A Dictionary of the Flowering Plants and Ferns* (8th edition) by J. C. Willis. Revised by H. K. Airy Shaw. Cambridge University Press. 1973.

** New host-plant records.

Species	Host-plant	Family*	Location	Reference
<i>adventitosus</i>	<i>Polystichum aculeatum</i>	Aspidiaceae	New Zealand	**
<i>angustatus</i>	<i>Cassinia leptophylla</i>	Compositae	New Zealand	Knight (1974)
<i>angustatus</i>	<i>C. vauvilliersii</i>	Compositae	New Zealand	Knight (1974)
<i>angustatus</i>	<i>Colocasia esculenta</i>	Araceae	Niue Is.	Eyles & Linnavuori (1974)
<i>angustatus</i>	<i>Crotalaria</i> sp.	Leguminosae	Niue Is.	Eyles & Linnavuori (1974)
<i>angustatus</i>	<i>Cytisus</i> sp.	Leguminosae	New Zealand	Knight (1974)
<i>angustatus</i>	<i>Erigeron</i> sp.	Compositae	New Zealand	Knight (1974)
<i>angustatus</i>	<i>Kumara</i> sp. (= <i>Aloë</i>)	Liliaceae	Niue Is.	Eyles & Linnavuori (1974)
<i>atrifrons</i>	<i>Morinda</i> sp.	Rubiaceae	S. Mariana Is.	Linnavuori (1960a)
<i>atrifrons</i>	<i>Pandanus</i> sp.	Pandanaceae	S. Mariana Is.	Linnavuori (1960a)
<i>collinus</i>	<i>Cheirodendron</i> sp.	Araliaceae	Marquesas Is.	**
<i>collinus</i>	<i>Cyathea</i> sp.	Cyatheaceae	Marquesas Is.	**
<i>collinus</i>	<i>Cyrtandra</i> sp.	Gesneriaceae	Marquesas Is.	Osborn (1934b)
<i>collinus</i>	<i>Metrosideros collina</i>	Myrtaceae	Marquesas Is.	Osborn (1934b)
<i>collinus</i>	<i>Vaccinium</i> sp.	Ericaceae	Marquesas Is.	Osborn (1934b)
<i>collinus</i>	<i>Weinmannia parviflora</i>	Cunoniaceae	Marquesas Is.	**
<i>collinus</i>	<i>Wickstroemia foetida</i>	Theaceae	Marquesas Is.	**
<i>cybele</i>	<i>Commersonia</i> sp.	Sterculiaceae	Solomon Is.	**
<i>cybele</i>	<i>Pipturus</i> sp.	Urticaceae	Solomon Is.	**
<i>maculatus</i>	<i>Metrosideros collina</i>	Myrtaceae	Marquesas Is.	Osborn (1934b)
<i>maculatus</i>	<i>Rapanea</i> sp.	Myrsinaceae	Marquesas Is.	**
<i>maculatus</i>	<i>Weinmannia parviflora</i>	Cunoniaceae	Marquesas Is.	**
<i>sarpedon</i>	<i>Acacia decurrens</i>	Leguminosae	Australia	**
<i>sarpedon</i>	<i>Hakea sericea</i>	Proteaceae	Australia	**
<i>sarpedon</i>	<i>Pultenaea villosa</i>	Leguminosae	Australia	**
<i>viridoflavidus</i>	<i>Piper guahamense</i>	Piperaceae	Guam	Linnavuori (1960a)

* Compiled from *A Dictionary of the Flowering Plants and Ferns* (8th edition) by J. C. Willis. Revised by H. K. Airy Shaw. Cambridge University Press. 1973.

** New host-plant records.

Most species occur in lowland forests, below 1200 m, although *bacchusi*, *ganymede*, *agenor* and *leto* in New Guinea and *angustatus*, *cloelia*, *silvanus* and *orestes* in the Philippines extend to 1600 m and sometimes higher. The species *ares*, *elissa*, *numa*, *eriphyle*, *montanus*, *leda* and *thedor* in New Guinea and *priam* in the Philippines are recorded only from the higher altitudes between 1600 m and 2745 m.

Certain localities are capable of supporting very large numbers of species, Damanti in the Finisterre Mountains of Papua New Guinea, Quoin Hill near Tawau in SE Sabah and the junction of the rivers Tinjar and Lejok at the foot of Mount Dulit in Sarawak, having 24, 33 and 13 species of *Batracomorphus* respectively. Whether these large numbers are due to strong host-plant specificity or the attractiveness of particular food plants is unknown. The answer to these and other biological questions within the genus will require intense and prolonged studies at selected sites of high species density. *Batracomorphus* species come readily to light and the bulk of the available material has been collected in this way. This technique, whilst highly productive of specimens, provides little information on biology other than general habitat. More precise techniques, such as canopy sampling from aerial walkways and tree-fogging for example, are required to determine the true insect-plant relationships in this genus as well as elsewhere within the Cicadellidae.

Distribution

Batracomorphus is a genus of several hundred species and occurs in all geographical regions with the exception of the New World. Its major expansion has taken place in the tropics and Linnavuori & Quartau (1975) and Quartau (1981b) have already described 121 species from the Afrotropical region.

The present study is concerned with the fauna of Malaysia (including West Malaysia), Brunei, Indonesia, Philippines, Micronesia, Papua New Guinea, Solomon Islands, New Hebrides, New Caledonia, Australia, New Zealand, Fiji, Samoa and the various Pacific Trust Territories of Polynesia. The area conforms approximately with the eastern Oriental and Australian regions of Gressitt (1961) with the exception of the Indo-Chinese and northern Malayan subregions and the Hawaiian division. The study area, which extends to approximately latitude 20° north, excludes the whole of continental Asia except for West Malaysia.

Records for the mainland fauna of the Iassinae (Metcalf, 1966) are limited to one species in Burma and 12 species in China, including Formosa, of which only one, *indicus*, has been recorded for the Pacific proper. Of the remaining species, four belong to genera other than *Batracomorphus*, four are nomina dubia and three are restricted to the Indo-Chinese subregion. The lack of material precludes the extension of the present study beyond its defined limits although the genus is currently under study in the Indian subcontinent by Dr C. A. Viraktamath. The genus does not occur in the Hawaiian division.

The strong morphological similarity between the Pacific species, with the exception of the male genitalia, and the absence of biological data, impedes any significant zoogeographical study of the Pacific fauna which would at best be tenuous and inconclusive. Also, the ability of the forests to support large numbers of species and the inadequacy of surveys made so far suggest that there are many more species to be discovered and that any conclusions made at the present time on faunal links in the Pacific area would be subject to continual revision in the light of new discoveries. Nevertheless, it is of value to draw attention to the few faunal patterns and island relationships that are apparent as a basis for further study.

The majority of the South East Asian Pacific species occur in the western part of the area and decrease dramatically further east, away from the source area. The Philippines, Borneo and New Guinea contain 40, 48 and 60 species respectively compared with the Solomon Islands which have five and the New Hebrides and New Caledonia which have six and four respectively. The decrease is even more marked further out in the Pacific where most of the islands or island groups contain only one or two species. Irregularities in this general pattern occur in Sumatra, Java, Sulawesi and the Lesser Sunda Islands each with very few recorded species, mainly due to inadequate sampling. Likewise, most of the major islands have been only partially surveyed and will themselves yield many more species which undoubtedly will substantiate rather than change the overall picture which has already emerged. The number of species in Australia (18) is similar to that in New Britain (17) despite its much greater land mass, due partly to its more arid and more temperate climate and partly to its more recent contact with the centre of origin of the genus.

Of the 188 species recorded from the South East Asia Pacific area in the present paper, 148 or 78 per cent are endemic. Endemism is higher in New Guinea and Australia, 85 per cent and 72 per cent respectively, than in Borneo (54 per cent) and the Philippines (57 per cent) both of which were once united to the mainland. West Malaysia itself has 20 species of which only 45 per cent are endemic. Sumatra and Java, also part of the Continental Shelf, share most or all of their species with West Malaysia and Borneo. The Lesser Sunda Islands are the eastern limits for the widespread mainland species *indicus*. Of the 39 non-endemic species, half are restricted to islands on or immediately north of the Sunda Shelf reflecting yet again the earlier connections between these land areas. Those species extending northwards into the Philippines are of particular interest as evidence of the two apparent routes followed during colonisation of these islands from the south, one through Palawan and the other on the opposite side of the Sulu Sea through Tawi Tawi and Mindanao. The early stages are shown by *itys*, *cocles* and *laodamia* which extend only into Palawan and by *chlorophana* which extends into both Palawan and Tawi Tawi. Further progress along the eastern route is demonstrated by *ascanius* and *hesperides*, which occur in Palawan and Mindanao, and by *ilia*, *anchises*, *juno* and *procne* which extend along the western arm as far as Busuanga Island and on the east through Tawi Tawi and Mindanao to as far as Negros or Luzon. A similar two-pronged migration has doubtless accounted for the present distribution of *teucer* and *ilioneus* which outside West Malaysia and Borneo are currently found only in Palawan, Negros and Luzon. Additional evidence of the

close relationship between West Malaysia, the islands of the Sunda Shelf and the Philippines is provided by the *teucer*-group, *proserpine*-group, *iulus*-group and *cyprian*-group all of which are confined to this area.

In contrast, Sulawesi, as an indication perhaps of its previous geographical isolation, has three of its four species unique to the island although one of these belongs to the *iulus*-group which is widespread on the Shelf. Wallace's Line, between the Sunda Shelf and Sulawesi, has been an effective barrier to eastwards migration, all species on the Shelf appearing to stop short at its eastern edge. The only non-endemic species on Sulawesi is *camillus* which is restricted to the eastern extremity of Minahassa province. Its wide distribution throughout the Philippines suggests a link between the two areas along the Kepulauan Archipelago.

New Guinea is the second largest island, after Australia, in the South East Asia Pacific area and lies on the main colonisation route between the west and Melanesia. Its strongest links in the present genus are with New Britain with which it shares a number of species. Species are also shared with Borneo (*zeus*), Ambon (*virbius*) and Australia (*lentiginosus*) whilst the widespread species *orestes* extends from the Philippines through Ceram, New Guinea, Australia, New Britain and Samoa. Of the several species-groups present in New Guinea, the *lavinia*-group extends to Borneo, Australia and New Britain and the *acestes*-group to the Philippines, Borneo, Bismark Archipelago and the Solomon Islands.

East of New Guinea the islands of the Melanesian Arcs have a very depauperate fauna composed of widespread species and endemics, the relationships of the latter being confined to adjacent islands within the Arcs. The New Hebrides and New Caledonia each share a species with Australia.

Apart from Guam and Fiji, which each have one endemic species, the smaller islands of the Pacific itself have been colonised by widespread species either from the west, such as *silvanus*, *curvatus* and *harpago* in Micronesia and *angustatus* and *orestes* in Polynesia, suggesting recent colonisation, or by species exclusive to the Pacific, such as *viridoflavus* in Micronesia. Further out in the Pacific, in the Bonin Islands and Marquesas Islands, the fauna, although depauperate, is endemic. The single Bonin Island species belongs to the *nereus*-group which extends through the Philippines to Australia whilst the two Marquesas Island species differ sufficiently from normal to suggest a colonisation date much earlier than that for the rest of Polynesia. The external characters found in the Marquesas Island species occur also in the single endemic species in Christmas Island in the Indian Ocean although the fact that these are derived from the more widespread primitive form suggests that the two faunas are convergent rather than related relicts.

A link between the Indian sub-continent and the SW. Pacific is demonstrated by the species *chlorophana* which occurs in Sri Lanka, West Malaysia, Java, Borneo and the Philippines. The presence of a second Indian species, *indicus*, previously recorded from Sri Lanka, Seychelles, Burma, China and the Lesser Sunda Islands, was not confirmed and the earlier record from the Pacific area may have been a misidentification. Although no species are shared between the Pacific and the Afrotropical region, the Pacific species *curvatus* is unique in having male genitalia similar to those of African species. It is very likely that the relationship between the faunas of these once united regions will become more apparent when the Indian and mainland Asian species are better known.

Techniques and methods

The techniques used in the handling of specimens are as given by Knight (1965) who also illustrates the parts of the male genitalia used for species identification.

In the following descriptions all species, unless otherwise indicated, are stramineous in colour and have the head narrower than the pronotum with the vertex of uniform length and sloping gently towards a broadly rounded anterior margin. Further, all species up to and including *triton* (p. 158) have the subgenital plates normal in shape, as in *harpago*, except as indicated for *maculatus* (p. 56), *adventitiosus* (p. 60), *anubis* (p. 80) and *pictus* (p. 97).

For purposes of uniformity and ease of species comparison the following structures and aspects are shown for each species: aedeagus, left lateral view (e.g. Fig. 1); aedeagus, posterior

view (e.g. Fig. 2); left pygophore lobe and process, left lateral view (e.g. Fig. 4); left style, left lateral view (e.g. Fig. 5). Additional views of the pygophore processes are sometimes given where necessary, the particular view being indicated in the appropriate caption. The illustration of the pygophore of *protesilaus* (Figs 374, 375, 376) is of the right-hand lobe, the left one having been damaged in the material available. The subgenital plates are illustrated for *anubis* (Figs 186, 187), *harpago* (Figs 467, 468), *montanus* (Figs 719, 720), *acesstes* (Figs 739, 740), *lavinia* (Figs 788, 789), *zeus* (Figs 816, 817), *dymas* (Fig. 901), *thestor* (Figs 916, 917), *leto* (Figs 921, 922), *boschmai* (Figs 928, 929), *semele* (Figs 935, 936) and *telamon* (Figs 972, 973). The pygophore, aedeagus and styles for each species are drawn to different scales, whilst each structure also varies slightly in scale between species.

The species descriptions are arranged mainly in accordance with the increasing modification of the pygophore processes (see p. 31) and subgenital plates (see p. 32).

The data for primary types are cited in full. For all other specimens the island only is cited, except for Borneo and New Guinea for which the country in question is also given. The names of the collectors are as follows: Adamson, A. M.; Alston, A. H. G.; Alton, A.; Andrews, C. W.; Ashby, A. P.; Atherton, D. O.; Bacchus, M. E.; Baker, C. F.; Bradley, J. D.; Brandt, W. W.; Brass, L. J.; Britton, E. B.; Le Bronnec, ?; Brooks, C. J.; Broomfield, P. S.; Bryan, E. H.; Buxton, P. A.; Celestino, M.; Cheesman, L. E.; Clarke, J. F. G.; Cochereau, P. M.; Conwell, L. A.; Corbett, G. H.; Dybas, H. S.; Ford, E. J., Jr; Gee, G. F.; Graham, O. H.; Grant, J. A.; Greening, H. G.; Greenslade, P.; Gressitt, J. L.; Gressitt, L.; Gressitt, M.; Gross, G. F.; Hardy, D. H.; Harris, T. R.; Henderson, M. R.; Heyneman, D.; Hill, F. L.; Hirashima, Y.; Hobby, B. M.; Hocking, B.; Holtman, H.; Hoogstraal, H.; Hopkins, G. H.; Howes, G.; Jackson, J. B.; Jacobson, E.; Joyce, C. R.; Kellers, H. C.; Knapp, V. R.; Knight, K. L.; Knight, W. J.; Koebele, A.; Krauss, N. L. H.; Krombein, K. V.; Kuncheria, K. J.; Lea, A. M.; Lever, R. A.; Maa, T. C.; MacGillivray, D.; Maddison, P. A.; Malkin, B.; Matsumura, S.; Mjöberg, E.; Miller, N. C. E.; Milliron, H. E.; Moore, A. W.; Muir, F.; Mumford, ?; Myers, J. G.; Nikitin, M. I.; O'Brien, C. W.; Oman, P.; Pemberton, C. E.; Pendlebury, H. M.; Perkins, R. C. L.; Piper, C. V.; Quate, L. W.; Quate, S.; Ray, E.; Reyes, A.; Richards, K. T.; Rio, G.; Robinson, G. S.; Schneirla, T.; Sedlacek, J.; Sedlacek, M.; Seimund, E.; Shanahan, P.; Smart, J.; Spencer, N. R.; Stangl, P. L.; Straatman, R.; Stüber, W.; Swezey, O. H.; Tauraa, H.; Tawi, ?; Thompson, M.; Tindale, N.; Tonnoir, A.; Torrevillas, H. M.; Torrevillas, W.; Turner, R. E.; Uzel, H.; Vecht, J. v. d.; Wager, A. M. R.; Weir, T.; Werner, F. G.; Winkler, J.; Yoshimoto, C. M.; Zwaluwenburg, R. H. Van.

Key to eastern Oriental and Australian species of *Batracomorphus* (males only)

1	Subgenital plates densely setose ventrally (Figs 917, 921, 928, 936, 972); basal stem and lobe indistinct	182
–	Subgenital plates sparsely or non-setose ventrally (Figs 186, 468, 719, 740, 788, 816, 901); basal stem and lobe usually pronounced, sometimes indistinct	2
2(1)	Subgenital plates with a row of hair-like setae on both dorsal and ventral margin (Fig. 468)	3
–	Subgenital plates with row of hair-like setae absent from either ventral margin (Figs 719, 740, 788, 816), dorsal margin except for basal group (Fig. 901), or both (Fig. 874)	142
3(2)	Aedeagus of basic type (Figs 6, 7), socle sometimes produced ventrally (Figs 222, 294), shaft sometimes elongate (Fig. 328), without processes or lamellate expansions	4
–	Aedeagus with processes or lamellate expansions (Figs 315, 363), the latter sometimes small and apical (Figs 218, 343, 348)	114
4(3)	Aedeagus with minute tubercles distally on posterior margin of shaft (Figs 370, 390)	138
–	Aedeagus without minute tubercles on posterior margin of shaft	5
5(4)	Apical process of styles without subapical expansion on ventral margin (Fig. 5), sometimes acuminate and weakly serrate (Figs 615, 680)	6
–	Apical process of styles with triangular (Fig. 571) or keel-like expansion (Fig. 292) or thorn-like projection (Fig. 529) subapically on ventral margin, sometimes small (Figs 254, 257, 337)	62

6(5)	Pygophore processes small, membranous, sometimes indistinct (Figs 16, 21).....	7
–	Pygophore processes large, sclerotised, variously shaped, distinct (Figs 4, 638).....	8
7(6)	Forewings stramineous, rarely speckled with small dark brown spots; pygophore processes finger-like, acute, distinct; apical process of style enlarged distally but not bulbous. Marquesas Islands.....	<i>collinus</i> (Osborn) (p. 53)
–	Forewings stramineous with dark brown transverse bands usually present; pygophore processes short, truncate, indistinct; apical process of style strongly expanded and bulbous distally. Marquesas Islands.....	<i>maculatus</i> (Osborn) (p. 53)
8(6)	Aedeagus with socle strongly produced ventrally, approximately equal in length to shaft (Figs 222, 299); apical process of style elongate, slender (Figs 227, 304).....	9
–	Aedeagus with socle not produced ventrally (Fig. 86), if equal in length to shaft then apical process of style expanded over distal half (Fig. 5).....	10
9(8)	Aedeagus with shaft recurved anteriorly; pygophore processes slender, strongly arched, apex acute; apical process of style directed posteriorly; colour stramineous or brown, forewings paler with narrow transverse brown band at midlength. Philippines, Palau, Borneo, Java.....	<i>curvatus</i> Linnavuori (p. 86)
–	Aedeagus with shaft directed dorsally; pygophore processes slender, directed posteriorly, apex expanded; apical process of style directed posteriorly with distal one-fourth to one-third turned abruptly dorsad; colour stramineous, pronotum, scutellum and forewings speckled with dark brown spots. New Guinea, New Britain.....	<i>cheesmanae</i> sp. n. (p. 99)
10(8)	Aedeagus with shaft elongate, slender, strongly recurved (Figs 318, 328).....	11
–	Aedeagus with shaft short, robust, directed dorsally, sometimes curving anterodorsally but not strongly recurved (Figs 6, 58).....	12
11(10)	Shaft of aedeagus directed dorsoposteriorly over basal half, recurved at midlength; ventral margin of socle extending ventrad of basal articulation of aedeagus. Philippines, Borneo, West Malaysia, Java, Sumatra.....	<i>procne</i> sp. n. (p. 102)
–	Shaft of aedeagus directed posteriorly at base, recurved basad of midlength; ventral margin of socle not extending ventrad of basal articulation of aedeagus. Philippines, Borneo, West Malaysia, Java.....	<i>chlorophana</i> (Melichar) (p. 103)
12(10)	Pygophore processes slender, without subapical expansions or processes (Figs 4, 30, 205).....	13
–	Pygophore processes slender or robust, with subapical process or expansion (Figs 463, 668, 248), the latter sometimes minute and represented only by acute ridge (Figs 214, 196, 167).....	28
13(12)	Apical process of style bulbous over distal half (Figs 89, 92).....	14
–	Apical process of style of uniform width or only slightly wider over distal half, never bulbous (Figs 5, 71).....	15
14(13)	Pygophore processes filiform, directed posteriorly and curving dorsally; apical process of style with small group of 'teeth' on ventral margin near midlength. Australia.....	<i>palicus</i> sp. n. (p. 65)
–	Pygophore processes slender but not filiform, directed posteriorly and markedly sinuate at midlength; apical process of style without group of 'teeth'. Fiji.....	<i>hamadryas</i> (Kirkaldy) (p. 65)
15(13)	Pygophore processes directed posteriorly, straight or sinuate (Figs 4, 239), apex sometimes turned mesad or laterad (Figs 31, 97).....	19
–	Pygophore processes directed posteriorly, curving dorsally (Figs 77, 85, 102).....	16
16(15)	Pygophore processes filiform, extending to posterior half of pygophore lobe (Figs 77, 85).....	17
–	Pygophore processes robust, extending only to midlength of pygophore lobe (Fig. 102). New Hebrides.....	<i>manlius</i> sp. n. (p. 66)
17(16)	Colour stramineous; pygophore processes reaching to or near posterior margin of pygophore lobe (Figs 72, 85).....	18
–	Colour stramineous with dark brown spots on forewings; pygophore processes shorter, not reaching to near posterior margin of pygophore lobe (Fig. 77). Australia.....	<i>sarpedon</i> sp. n. (p. 62)
18(17)	Pygophore processes annulate apically; apical process of style of uniform width. Australia.....	<i>hecate</i> sp. n. (p. 65)
–	Pygophore processes not annulate apically; apical process of style expanded over distal half. Philippines, Borneo.....	<i>ilia</i> sp. n. (p. 62)

- 19(15) Pygophore processes internally convolute subapically (Figs 205, 206). Philippines
cloelia sp. n. (p. 83)
- Pygophore processes not convoluted subapically 20
- 20(19) Pygophore processes with apex directed posteriorly (Figs 3, 97) 23
- Pygophore processes with apex turned mesally (Figs 31, 55) 21
- 21(20) Aedeagus with socle relatively large, its dorsoventral length approximately two-thirds or more length of shaft; gonopore and anterior incision of approximately equal length (Figs 28, 53) 22
- Aedeagus with socle much smaller, its dorsoventral length approximately one-third length of shaft; gonopore much longer than anterior incision (Fig. 33). Philippines
pentheus sp. n. (p. 56)
- 22(21) Pygophore processes turned abruptly mesad subapically; aedeagus with shaft turned only slightly anteriorly from midlength; apical process of style abruptly narrowed subapically. Borneo *charis* sp. n. (p. 56)
- Pygophore processes turned gradually mesad subapically; aedeagus with shaft turned strongly anteriorly from midlength; apical process of style gradually narrowed to apex. Australia, New Hebrides, New Zealand *adventitosus* Evans (p. 60)
- 23(20) Length 3.75–5.00 mm; pygophore processes elongate, slender, not filamentous (Figs 4, 96, 239) 24
- Length 5.60–6.00 mm; pygophore processes filamentous (Fig. 449). New Hebrides
cronos sp. n. (p. 121)
- 24(23) Pygophore processes turned abruptly mesad just before midlength, then posteriorly (Fig. 97). Australia *latona* sp. n. (p. 66)
- Pygophore processes straight or sinuate but not turned abruptly mesad along its length (Figs 3, 239) 25
- 25(24) Pygophore processes sinuate in lateral aspect (Fig. 239). Solomon Islands
tydeus sp. n. (p. 89)
- Pygophore processes straight in lateral aspect (Fig. 4) 26
- 26(25) Aedeagus with socle relatively large, its dorsoventral length approximately equal to length of shaft (Fig. 1). Widespread *angustatus* (Osborn) (p. 51)
- Aedeagus with socle smaller, its dorsoventral length much shorter than length of shaft (Figs 6, 11) 27
- 27(26) Colour stramineous, face dark brown medially; pygophore processes straight. S. Mariana Islands *atrifrons* (Metcalf) (p. 51)
- Colour stramineous, dorsum speckled with small dark brown spots; pygophore processes relatively shorter, slightly arched. Philippines *charybdis* sp. n. (p. 53)
- 28(12) Pygophore processes with apex bifid (Fig. 643) or with distinct subapical spur (Fig. 463), the latter sometimes small (Figs 201, 458) 39
- Pygophore processes with apex expanded (Figs 248, 280) or with medial, ventral or lateral margin acuminate and keel-like subapically (Figs 167, 275), sometimes only slightly so (Figs 40, 210, 214) 29
- 29(28) Pygophore processes expanded apically, subapical margin acuminate or not (Figs 248, 280) 30
- Pygophore processes not expanded apically, medial, ventral or lateral margin acuminate and keel-like subapically (Figs 166, 243, 275) 32
- 30(29) Aedeagus with base of shaft obliquely rounded to socle (Figs 245, 311); pygophore processes strongly expanded apically (Figs 248, 313) 31
- Aedeagus with base of shaft abruptly rounded to socle (Fig. 277); pygophore processes only slightly expanded apically (Fig. 280). Borneo *juturna* sp. n. (p. 95)
- 31(30) Pygophore processes directed posteriorly and expanded plate-like subapically; apical process of style abruptly narrowed subapically; aedeagus with shaft of approximately uniform width in lateral aspect. Australia *elegans* (Evans) (p. 99)
- Pygophore processes directed posteriorly at base and turned abruptly mesad at midlength, distal half expanded claw-like; apical process of style gradually narrowed to apex; aedeagus with shaft tapered to acute apex. New Guinea *ganymede* sp. n. (p. 90)
- 32(29) Aedeagus with gonopore and anterior incision of approximately equal length (Figs 164, 273) 33
- Aedeagus with anterior incision approximately two-thirds length of gonopore (Fig. 39). Philippines *briareus* sp. n. (p. 56)

33(32)	Colour stramineous, without dark brown spots	35
-	Colour stramineous, with dark brown spots on forewings and sometimes pronotum	34
34(33)	Pygophore processes with subapical acuminate margin non-serrate; aedeagus with gonopore and anterior incision extending to near base of shaft; pronotum and forewings speckled with very small dark brown spots; length 5.25 mm. Philippines	
-	<i>priam</i> sp. n. (p. 83)	
-	Pygophore processes with subapical acuminate margin serrate; aedeagus with gonopore and anterior incision extending to midlength of shaft; pronotum stramineous, forewings speckled with small variably sized dark brown spots; length 4.00-4.50 mm. Solomon Islands	
-	<i>cybele</i> sp. n. (p. 78)	
35(33)	Pygophore processes with distal third turned abruptly dorsad (Fig. 275). West Malaysia	
-	<i>tithonus</i> sp. n. (p. 95)	
-	Pygophore processes with distal third not turned dorsad (Figs 195, 214).....	36
36(35)	Pygophore processes directed posteriorly, slightly sinuate (Fig. 195). Philippines	
-	<i>torrevillasi</i> sp. n. (p. 82)	
-	Pygophore processes directed dorsoposteriorly over basal half then turned posteriorly or ventroposteriorly (Figs 214, 285)	37
37(36)	Pygophore processes with extreme apex turned abruptly at angle to distal half of process (Fig. 243). New Guinea	
-	<i>proteus</i> sp. n. (p. 90)	
-	Pygophore processes with apex not so turned (Figs 214, 285)	38
38(37)	Pygophore processes sinuate in ventral aspect, distal half turned posteroventrally in lateral aspect. Australia.....	
-	<i>icarus</i> sp. n. (p. 85)	
-	Pygophore processes straight in ventral aspect, distal half turned posteriorly in lateral aspect. Micronesia	
-	<i>viridoflavidus</i> (Metcalf) (p. 95)	
39(28)	Pygophore lobes strongly produced posteriorly, their dorsal margins level with and in line with dorsal margin of base, their apex acutely rounded (Fig. 661). New Guinea	
-	<i>notulatus</i> Blöte (p. 151)	
-	Pygophore lobes not strongly produced posteriorly, their dorsal margin ventrad of and at angle to dorsal margin of base, their apex broadly rounded (Figs 463, 622)	40
40(39)	Pygophore processes bifid at extreme apex, the two branches very short, of approximately equal length, each not or only slightly longer than wide (Figs 51, 62, 67)	41
-	Pygophore processes with bifurcation or spur more basad, the two branches of markedly different or similar length, one or both considerably longer than wide (Figs 463, 623, 458)	43
41(40)	Aedeagus with gonopore and anterior incision extending to midlength of shaft, the latter slender and tapering markedly to finger-like apex in lateral aspect (Fig. 48); pygophore processes sinuate in ventral aspect (Fig. 51). Philippines ..	
-	<i>inachus</i> sp. n. (p. 59)	
-	Aedeagus with gonopore and anterior incision extending basad of midlength of shaft, the latter more robust and less tapered distally (Figs 58, 64); pygophore processes curving mesad in ventral aspect but not sinuate (Figs 62, 67)	42
42(41)	Aedeagus with shaft of uniform width in lateral aspect; pygophore processes directed posteriorly or dorsoposteriorly and curving medially. Australia, New Caledonia	
-	<i>dryas</i> (Kirkaldy) (p. 60)	
-	Aedeagus with shaft much wider basally than distally in lateral aspect; pygophore processes directed posteriorly and curving ventrally. Philippines	
-	<i>ancus</i> sp. n. (p. 60)	
43(40)	Pygophore processes filamentous (Fig. 449), with small subapical spur on ventral margin approximately one-fourth distance from apex; length 5.5-6.0 mm. New Hebrides	
-	<i>cronos</i> sp. n. (p. 121)	
-	Pygophore processes not filamentous (Figs 498, 643), if so then length less than 5.0 mm	44
44(43)	Pygophore processes with small triangular spur subapically on lateral margin, approximately as long as wide (Figs 201, 458, 614)	45
-	Pygophore processes with subapical spur on ventral margin, triangular or elongate (Figs 498, 643), if on lateral margin then always much longer than wide (Figs 623, 629)	47
45(44)	Pygophore processes directed posteriorly, sometimes curving mesally (Figs 458, 460).....	46
-	Pygophore processes directed posteriorly, sinuate at mid-length with apex turned laterally (Figs 200, 201). New Guinea.....	
-	<i>memnon</i> sp. n. (p. 83)	
46(45)	Pygophore processes strongly curved mesad; length 5.00-5.25 mm. Philippines	
-	<i>hera</i> sp. n. (p. 144)	

- Pygophore processes directed posteriorly or weakly curved mesad; length 3.50–3.75 mm. New Caledonia *acrisius* sp. n. (p. 121)
- 47(44) Aedeagus with anterior incision markedly shorter than gonopore (Figs 493, 504) 48
- Aedeagus with anterior incision equal to or longer than gonopore (Figs 461, 635) 49
- 48(47) Head narrower than pronotum; eyes normal. Philippines, Borneo, West Malaysia
juno sp. n. (p. 125)
- Head equal to or wider than pronotum; eyes prominent. Christmas Island (Indian Ocean) *punctatus* (Kirby) (p. 127)
- 49(47) Stramineous or light brown 53
- Stramineous or brown, with dark brown spots or bands 50
- 50(49) Pygophore processes with upper branch of apical bifurcation acute (Fig. 595) 51
- Pygophore processes with upper branch of apical bifurcation bifid (Figs 643, 652) 52
- 51(50) Pygophore processes sinuate at midlength, the upper branch of apical bifurcation expanded subapically; aedeagus with shaft tapering throughout its length in lateral aspect to finger-like apex. New Guinea *nabirensis* Evans (p. 141)
- Pygophore processes straight with distal third turned dorsad, the upper branch of apical bifurcation not expanded subapically; aedeagus with shaft of uniform width in lateral aspect to near apex. New Guinea *agenor* sp. n. (p. 142)
- 52(50) Pygophore processes with branches of apical bifurcation of approximately equal length; pronotum and scutellum speckled with small dark brown spots; forewings with apex, patch on claval commissure and another at anterior end of appendix dark brown. New Guinea *molus* sp. n. (p. 148)
- Pygophore processes with upper branch of apical bifurcation much shorter than lower; pronotum and scutellum without dark brown spots; forewings speckled with small dark brown spots. New Guinea *eriphyle* sp. n. (p. 150)
- 53(49) Pygophore processes with both branches of apical bifurcation expanded (Figs 639, 648) 54
- Pygophore processes with one or both branches of apical bifurcation acute (Figs 608, 623, 674) 55
- 54(53) Pygophore processes straight, directed posteriorly, both branches of apical bifurcation short and weakly bifid. New Guinea *pyrrhus* sp. n. (p. 150)
- Pygophore processes directed posteriorly and turned dorsad at midlength, both branches of apical bifurcation rounded distally and with small spurs. Philippines
dido sp. n. (p. 148)
- 55(53) Pygophore processes with subapical spur short, triangular, directed ventrally at right angles to axis of process (Figs 463, 608, 619) 56
- Pygophore processes with subapical spur elongate and sometimes equal in length to upper branch, directed posteriorly in line with axis of process or laterally (Figs 623, 668, 681) 58
- 56(55) Pygophore processes directed posteriorly and turned dorsoposteriorly at midlength basad of subapical spur (Fig. 619). New Britain *dardanus* sp. n. (p. 144)
- Pygophore processes directed posteriorly, straight or with apex turned only slightly dorsad at level of subapical spur (Figs 463, 608) 57
- 57(56) Pygophore processes slender apically, ventral margin between subapical spur and apex not or only slightly serrate. Kusaie, New Ireland, New Britain, Solomon Islands, New Hebrides *harpago* Linnavuori (p. 122)
- Pygophore processes robust apically, ventral margin between subapical spur and apex strongly serrate. New Guinea *ceres* sp. n. (p. 144)
- 58(55) Pygophore processes with subapical spur or branch directed laterally (Figs 622, 623) 59
- Pygophore processes with subapical spur or branch directed posteriorly (Figs 668, 681) 60
- 59(58) Style with apical process only slightly expanded over distal half, abruptly narrowed to apex; aedeagus with gonopore extending to just basad of midlength of shaft. New Guinea *aeneas* sp. n. (p. 145)
- Style with apical process strongly expanded over distal half, gradually narrowed to apex; aedeagus more elongate, gonopore extending approximately three-fourths length of shaft. Philippines *orion* sp. n. (p. 146)
- 60(58) Aedeagus with shaft robust basally, tapering throughout length in lateral aspect to finger-like apex (Fig. 678). Philippines, Ceram, New Guinea, Manus, New Britain, Australia, Samoa *orestes* sp. n. (p. 152)

–	Aedeagus with shaft slender, of approximately uniform width in lateral aspect to near apex (Fig. 666)	61
61(60)	Pygophore processes with upper branch of apical bifurcation unsclerotised basally, lower branch approximately one-fourth length of upper; length 4 mm. New Guinea <i>turnus</i> sp. n. (p. 152)	
–	Pygophore processes with upper branch of apical bifurcation uniformly sclerotised, lower branch approximately one-half length of upper; length 5.0–5.5 mm. New Guinea	<i>thoas</i> sp. n. (p. 152)
62(5)	Pygophore processes elongate, slender, apex acute, without subapical expansions, ridges or projections (Figs 45, 109, 336)	63
–	Pygophore processes elongate, slender, subapical expansions (Fig. 267), ridges (Fig. 256) or projections (Fig. 514) present though sometimes small (Fig. 139)	78
63(62)	Aedeagus with shaft elongate, slender, strongly recurved anteriorly, gonopore 3–4 times length of anterior incision (Figs 333, 338)	64
–	Aedeagus with shaft usually robust, directed dorsally, if slender and recurved anteriorly then gonopore not 3–4 times length of anterior incision (Figs. 104, 131, 228)	65
64(63)	Pygophore processes directed posteriorly or dorsoposteriorly; aedeagus with apex of shaft reaching slightly anterior to basal apodeme; length 3.5 mm. Guam <i>evander</i> sp. n. (p. 104)	
–	Pygophore processes directed posteriorly with apex turned mesally; aedeagus with apex of shaft not or only just reaching level of basal apodeme; length 4.25–4.75 mm. Philippines, Ambon Island, Borneo, Micronesia	<i>silvanus</i> sp. n. (p. 104)
65(63)	Aedeagus with gonopore longer than anterior incision (Figs 131, 228)	66
–	Aedeagus with gonopore equal to or shorter than anterior incision (Figs 111, 127)	67
66(65)	Aedeagus with socle produced ventrally and equal in length to basal apodeme, shaft recurved anteriorly with apex level with basal apodeme; pygophore processes with apex curving ventromesally; style with subapical process much smaller than finger-like apex. India, Burma, China, Lesser Sunda Islands	<i>indicus</i> (Lethierry) (p. 86)
–	Aedeagus with socle not produced ventrally, much shorter than basal apodeme, shaft slightly recurved but not reaching to level of basal apodeme; pygophore processes directed posteriorly with apex curving slightly dorsad; style with subapical process equal in length to finger-like apex. New Caledonia	<i>hebrus</i> sp. n. (p. 71)
67(65)	Pygophore processes sinuate in lateral aspect (Fig. 45). West Malaysia <i>deiphobus</i> sp. n. (p. 58)	
–	Pygophore processes not sinuate though apex sometimes turned slightly dorsad or ventrad (Figs 105, 142, 162)	68
68(67)	Style with apical process elongate, slender, decreasing markedly in width from basal half to bifid apex (Fig. 116). Borneo, West Malaysia	<i>orcus</i> sp. n. (p. 68)
–	Style with apical process expanded over distal half or of uniform width to near apex (Figs 106, 125, 130)	69
69(68)	Reddish brown, forewings paler, dorsum speckled with small dark brown spots. Borneo <i>hesione</i> sp. n. (p. 70)	
–	Uniformly stramineous or light brown, without dark brown spots	70
70(69)	Style with subapical process much longer than more apical section, finger-like and curved ventrally to form a near circular concavity in lateral aspect (Fig. 114). Australia <i>gressitti</i> sp. n. (p. 68)	
–	Style with subapical process triangular, equal to or shorter than more apical section, directed ventrally but not forming concavity as above (Figs 143, 163)	71
71(70)	Pygophore processes reaching to approximately midlength of lateral lobe (Fig. 105). Borneo, West Malaysia	<i>tarquin</i> sp. n. (p. 66)
–	Pygophore processes reaching to or near posterior margin of lateral lobe (Figs 80, 126) ...	72
72(71)	Pygophore processes directed dorsoposteriorly, not forming angle with portion basad of lateral lobe (Fig. 109). Borneo	<i>io</i> sp. n. (p. 68)
–	Pygophore processes directed posteriorly or dorsoposteriorly, always forming angle with portion basad of lateral lobe (Fig. 142)	73
73(72)	Pygophore processes with apex slightly upturned (Figs 80, 129)	74
–	Pygophore processes with apex straight or turned slightly ventrad (Figs 126, 162)	77
74(73)	Style with apical process strongly expanded over distal half, subapical expansion extending distally level with more apical section (Figs 143, 146)	75

–	Style with apical process not expanded over distal half, subapical expansion markedly basad of more apical section (Fig. 130). New Hebrides	<i>ajax</i> sp. n. (p. 71)	76
75(74)	Aedeagus with shaft directed dorsally (Figs 140, 144)		76
–	Aedeagus with shaft turned anterodorsally from near base (Fig. 78). Philippines, Borneo	<i>cocles</i> sp. n. (p. 62)	
76(75)	Length 5·36 mm; style with subapical process large, extending slightly distad of more apical portion. Borneo	<i>helenus</i> sp. n. (p. 73)	
–	Length 3·84 mm; style with subapical process small, not extending distad of more apical portion. Borneo	<i>calliope</i> sp. n. (p. 73)	
77(73)	Pygophore processes directed posteriorly. New Britain	<i>hecuba</i> sp. n. (p. 71)	
–	Pygophore processes directed dorsoposteriorly with apex turned ventroposteriorly. Australia	<i>atreus</i> sp. n. (p. 76)	
78(62)	Aedeagus with socle produced ventrally, its ventral margin dorsad of basal articulation (Fig. 289); style with apical process elongate, slender, of approximately uniform width, apical portion turned dorsad (Fig. 298)		79
–	Aedeagus with socle not produced ventrally, its ventral margin ventrad of or level with basal articulation (Figs 513, 567), if dorsad of then style not as above		81
79(78)	Pygophore processes strongly expanded apically (Fig. 308)		80
–	Pygophore processes terminating in two small finger-like projections (Fig. 297). New Guinea	<i>theseus</i> sp. n. (p. 97)	
80(79)	Pygophore processes directed dorsoposteriorly and turned posteromesally at midlength then posteroventrally, apical fourth expanded flange-like laterally; stramineous with dark brown markings; length 7 mm. New Guinea	<i>pictus</i> Blöte (p. 97)	
–	Pygophore processes directed dorsoposteriorly, straight, with triangular expansion at apex; stramineous without markings; length 6 mm. New Guinea	<i>cosus</i> sp. n. (p. 99)	
81(78)	Pygophore processes with subapical process or projection, the latter sometimes small and thorn-like (Figs 519, 578)		82
–	Pygophore processes with subapical portion expanded (Fig. 267) or acutely ridged (Fig. 256), the latter sometimes small (Fig. 139)		100
82(81)	Pygophore processes with subapical projection equal to or longer than more apical portion (Fig. 634)		83
–	Pygophore processes with subapical projection shorter than more apical portion (Fig. 546)		85
83(82)	Pygophore processes with subapical projection longer than more apical portion. New Guinea	<i>eriphyle</i> sp. n. (p. 150)	
–	Pygophore processes with subapical projection equal in length to more apical portion		84
84(83)	Pygophore processes directed posteriorly with apical one-third turned posteroventrally, subapical projection directed laterally. New Britain, New Ireland	<i>tatius</i> sp. n. (p. 146)	
–	Pygophore processes directed dorsoposteriorly, sinuate at midlength, subapical process directed ventrally. Borneo	<i>palamedes</i> sp. n. (p. 137)	
85(82)	Stramineous or light brown, without dark brown spots or markings		86
–	Stramineous, with dark brown spots or markings		92
86(85)	Pygophore processes with subapical projection small, thorn-like, directed at right angle to process (Fig. 498)		87
–	Pygophore processes with subapical projection finger-like, directed posteroventrally (Figs 657, 658). Borneo, Philippines	<i>hesperides</i> sp. n. (p. 150)	
87(86)	Aedeagus with posterior margin of shaft angled at level of gonopore (Fig. 547). New Britain	<i>latinus</i> sp. n. (p. 133)	
–	Aedeagus with posterior margin of shaft not angled at level of gonopore (Fig. 521)		88
88(87)	Style with subapical projection broadly triangular, shorter than more apical portion of process (Fig. 520)		89
–	Style with subapical projection narrowly triangular, as long as more apical portion of process (Fig. 524)		91
89(88)	Style with apical process abruptly narrowed subapically (Fig. 520)		90
–	Style with apical process gradually narrowed to apex (Fig. 510). Philippines	<i>numitor</i> sp. n. (p. 128)	
90(89)	Aedeagus with shaft obliquely angled to socle (Fig. 517); style with dorsal margin of apical process sinuate (Fig. 520). Philippines	<i>maia</i> sp. n. (p. 129)	

- Aedeagus with shaft abruptly rounded to socle (Fig. 493); style with dorsal margin of apical process straight (Fig. 497). Philippines, Borneo, West Malaysia... *juno* sp. n. (p. 125)
- 91(88) Style with apical process of uniform width, its distal half turned slightly dorsad (Fig. 524). Borneo *pilumnus* sp. n. (p. 129)
- Style with apical process slightly expanded distad of midlength then narrowing to apex, directed posteriorly (Fig. 532). Borneo *mettus* sp. n. (p. 132)
- 92(85) Style with apical process commencing to narrow distally at point approximately two-thirds to three-fourths length from base (Figs 538, 553) 93
- Style with apical process commencing to narrow more distally, greater than three-fourths length from base (Fig. 515). New Britain..... *ixion* sp. n. (p. 129)
- 93(92) Pygophore processes with ventral margin serrate for short distance immediately basad of subapical projection (Fig. 582). New Guinea *numa* sp. n. (p. 139)
- Pygophore processes with ventral margin non-serrate or if so then on portion distad of subapical projection (Fig. 557) 94
- 94(93) Pygophore processes with ventral or dorsal margin serrate distad of subapical projection (Figs 554, 578) 95
- Pygophore processes with margin non-serrate 97
- 95(94) Pygophore processes with dorsal margin serrate distad of subapical projection, latter very small (Fig. 578); style with subapical process elongate, much longer than more apical portion (Fig. 579). New Guinea *jove* sp. n. (p. 138)
- Pygophore processes with ventral margin serrate distad of subapical projection, latter long and narrow (Fig. 554); style with subapical process triangular, equal to or shorter than more apical portion (Fig. 553) 96
- 96(95) Pygophore processes with subapical projection approximately equal in length to more apical portion (Fig. 554); aedeagus with posterior margin of shaft concave near base (Fig. 551); style with apical process robust (Fig. 553). New Guinea, New Britain *laertes* sp. n. (p. 135)
- Pygophore processes with subapical projection much shorter than more apical portion (Fig. 557); aedeagus without concavity on posterior margin of shaft (Fig. 555); style with apical process elongate (Fig. 558). New Guinea..... *portunus* sp. n. (p. 135)
- 97(94) Style with subapical projection elongate, dagger-like, longer than more apical portion (Fig. 591) 98
- Style with subapical projection short, broadly triangular, as long as or shorter than more apical portion (Fig. 545) 99
- 98(97) Pygophore processes with subapical spur directed posteroventrally, more apical portion of process minutely dentate or expanded at apex (Figs 589, 590). New Guinea, Ambon Island..... *virbius* sp. n. (p. 141)
- Pygophore processes with subapical spur directed ventrally, more apical portion of process not dentate or expanded (Fig. 527). Australia *tyndareus* sp. n. (p. 130)
- 99(97) Style with apical process strongly expanded near midlength, abruptly narrowed to apex (Fig. 545). New Guinea *eryx* sp. n. (p. 132)
- Style with apical process of uniform width or only slightly expanded at midlength, gradually narrowed to apex (Fig. 538). New Britain..... *tarpeia* sp. n. (p. 132)
- 100(81) Pygophore processes with apex expanded (Figs 267, 560) 101
- Pygophore processes with subapical margin acutely ridged (Figs. 167, 570), sometimes minutely so (Figs 139, 150, 190) 102
- 101(100) Pygophore processes straight, reaching posterior margin of lobes, wrinkled along its length, apex horizontally spatulate (Fig. 266); aedeagus with anterior incision longer than gonopore (Fig. 263); style with apical process slender, only slightly expanded near midlength (Fig. 265); stramineous or light brown; length 6.08 mm. New Guinea *elissa* sp. n. (p. 92)
- Pygophore processes sinuate, not reaching posterior margin of lobes, not wrinkled along its length, apex expanded fan-like in vertical plane, its posterior margin serrate (Fig. 560); aedeagus with anterior incision slightly shorter than gonopore (Fig. 559); style strongly expanded over distal half (Fig. 562); stramineous with dark brown spots on forewings; length 4.32 mm. Borneo *capaneus* sp. n. (p. 136)
- 102(100) Style with apical process abruptly narrowed subapically to form near circular concavity, its proximal margin with pronounced lip ventrally (Fig. 191). New Britain *chryseis* sp. n. (p. 81)

–	Style with apical process gradually or abruptly narrowed subapically, if abruptly then not as above	103
103(102)	Style with subapical projection extending distad of more apical portion (Figs 151, 175) ...	104
–	Style with subapical projection not extending distad of more apical portion (Figs 137, 574)	105
104(103)	Style with apical process of uniform width, sinuate (Fig. 175); pygophore processes turned abruptly posterolaterally just distad of midlength, its lateral margin acuminate subapically (Fig. 174). New Guinea	<i>circe</i> sp. n. (p. 78)
–	Style with apical process strongly expanded over distal half (Fig. 151); pygophore processes turned dorsoposteriorly and then posteriorly over distal half, its ventral margin acuminate subapically (Fig. 150). Borneo, Sumatra	<i>catiline</i> sp. n. (p. 75)
105(103)	Pygophore processes with apical one-third turned abruptly dorsad (Fig. 569)	106
–	Pygophore processes directed posteriorly, if turned dorsad distally then apex directed posteriorly (Figs 154, 260)	107
106(105)	Pygophore processes turned posteromesally at midlength (Fig. 570); stramineous with dark brown spots on dorsum. New Guinea	<i>rhea</i> sp. n. (p. 137)
–	Pygophore processes not turned posteromesally at midlength; stramineous without dark brown spots on dorsum. New Guinea	<i>daunus</i> sp. n. (p. 137)
107(105)	Pygophore processes acuminate subapically on ventral or mesal margin (Figs 252, 256) ...	108
–	Pygophore processes acuminate subapically on dorsal margin (Fig. 260). West Malaysia	<i>procris</i> sp. n. (p. 92)
108(107)	Pygophore processes acuminate subapically on mesal margin (Fig. 252). New Guinea	<i>ares</i> sp. n. (p. 91)
–	Pygophore processes acuminate subapically on ventral margin (Fig. 256)	109
109(108)	Pygophore processes with distal one-third turned dorsoposteriorly and then posteriorly or ventrally (Figs 154, 158)	110
–	Pygophore processes directed posteriorly with apex turned slightly ventrally or mesally, or dorsoposteriorly throughout length (Figs 166, 256)	111
110(109)	Pygophore processes with apex acute, directed posteriorly, ventral margin acuminate at apex (Fig. 154); stramineous with dark brown spots on forewings. Australia	<i>torquatus</i> sp. n. (p. 75)
–	Pygophore processes with apex bifid, turned ventrally, ventral margin acuminate approximately one-fourth distance from apex (Fig. 158); stramineous without dark brown spots. New Guinea	<i>tarchon</i> sp. n. (p. 75)
111(109)	Pygophore processes directed dorsoposteriorly, keel-like expansion on ventral margin extending over distal half (Fig. 256); stramineous without dark brown spots. Borneo	<i>ilus</i> sp. n. (p. 92)
–	Pygophore processes directed posteriorly with apical portion sometimes turned slightly ventrally or mesally, ventral margin acuminate over apical one-third or less (Figs 166, 178); stramineous with dark brown spots on forewings and sometimes also on dorsum	112
112(111)	Style with apical process turned dorsoposteriorly at midlength, sinuous (Fig. 179). New Guinea	<i>bacchusi</i> sp. n. (p. 78)
–	Style with apical process not turned dorsoposteriorly at midlength, non-sinuous (Figs 137, 165)	113
113(112)	Pygophore processes with ventral margin distinctly acuminate and serrate over apical one-third (Figs 166, 167); stramineous with dark brown spots on forewings. Solomon Islands	<i>cybele</i> sp. n. (p. 78)
–	Pygophore processes with ventral margin indistinctly acuminate and minutely serrate subapically over less than one-third length (Fig. 139); light brown with dark brown spots over vertex, thorax and forewings. Solomon Islands	<i>laomedon</i> sp. n. (p. 72)
114(3)	Aedeagus with elongate processes on shaft (Figs 315, 417)	115
–	Aedeagus with lamellate expansions and/or lobes on shaft, sometimes small (Figs 24, 363, 699)	116
115(114)	Aedeagus with processes apical (Fig. 315). Philippines	<i>rhesus</i> sp. n. (p. 101)
–	Aedeagus with processes basal (Fig. 418). Borneo	<i>ammon</i> sp. n. (p. 116)
116(114)	Styles with subapical projection or lobe on ventral margin (Figs 441, 426)	117
–	Styles without subapical projection or lobe on ventral margin (Fig. 360)	124
117(116)	Subgenital plates with distinct basal stem (Fig. 467)	118
–	Subgenital plates without distinct basal stem (Fig. 187). New Guinea	<i>anubis</i> sp. n. (p. 80)

118(117)	Aedeagus with shaft slender, recurved anteriorly, with two small triangular expansions subapically on anterior margin (Fig. 348). Sulawesi	<i>pelops</i> sp. n. (p. 106)
-	Aedeagus with shaft slender or robust, directed dorsally or only slightly recurved anteriorly, expansions not as above	119
119(118)	Style with apical process of uniform width or tapering gradually to apex (Figs 416, 431) ...	120
-	Style with apical process abruptly narrowed distally, forming distinct concavity in lateral aspect (Figs 436, 445)	122
120(119)	Style with apical process serrate ventrally over distal half (Fig. 416). Borneo	<i>dolon</i> sp. n. (p. 115)
-	Style with apical process non-serrate ventrally	121
121(120)	Pygophore processes with distal one-third turned dorsad, its ventral margin dentate (Fig. 424). Borneo	<i>troilus</i> sp. n. (p. 117)
-	Pygophore processes with apex turned ventrally, non-dentate (Fig. 429). Sumatra, Borneo	<i>rorida</i> (Linnavuori) (p. 117)
122(119)	Aedeagus with lamellate expansions confined to distal half of shaft (Figs 433, 438); stramineous	123
-	Aedeagus with lamellate expansions extending to near base of shaft (Fig. 443); stramineous with dark brown spots on forewings. West Malaysia	<i>hector</i> sp. n. (p. 121)
123(122)	Aedeagus with lamellate expansions small, triangular, subapical on posterior margin (Fig. 432); style with concavity in lateral aspect broad, extending over distal half of apical process (Fig. 436). West Malaysia	<i>otus</i> sp. n. (p. 119)
-	Aedeagus with lamellate expansions keel-like, extending along anterolateral margins from apex to near midlength (Fig. 437); style with concavity in lateral aspect very narrow (Fig. 441). West Malaysia	<i>melampus</i> sp. n. (p. 119)
124(116)	Aedeagus with expansions small, lobe-like, at apex of shaft (Figs 218, 709)	125
-	Aedeagus with expansions lamellate, extensive, variously located on shaft (Figs 344, 407)	131
125(124)	Style with apical process strongly expanded over distal half (Fig. 236)	126
-	Style with apical process of approximately uniform width (Fig. 702)	127
126(125)	Aedeagus robust, shaft relatively short, directed dorsally, gonopore extending approximately one-third length of shaft (Fig. 233). Sulawesi	<i>daedalus</i> sp. n. (p. 88)
-	Aedeagus slender, elongate, shaft directed dorsally with apex turned anteriorly, gonopore extending to just basad of midlength (Fig. 217). Philippines, Sulawesi	<i>camillus</i> sp. n. (p. 86)
127(125)	Pygophore processes simple, tapering to acute apex (Fig. 25); aedeagus with gonopore extending approximately one-fourth length of shaft (Fig. 23). Borneo, West Malaysia	<i>caeneus</i> sp. n. (p. 55)
-	Pygophore processes branched or swollen over distal half (Fig. 695); aedeagus with gonopore extending to or just basad of midlength (Fig. 698)	128
128(127)	Pygophore processes branched distally (Figs 694, 710)	129
-	Pygophore processes swollen distally (Fig. 701). Borneo	<i>coeus</i> sp. n. (p. 156)
129(128)	Pygophore processes with branches of approximately equal length (Fig. 694). Borneo, West Malaysia	<i>proserpine</i> sp. n. (p. 155)
-	Pygophore processes with one branch markedly shorter than other (Fig. 705)	130
130(129)	Pygophore processes with longest branch directed ventromesally (Fig. 706). Borneo	<i>thalia</i> sp. n. (p. 157)
-	Pygophore processes with longest branch directed posteriorly (Fig. 711). Sumatra	<i>triton</i> sp. n. (p. 158)
131(124)	Aedeagus with gonopore extending approximately one-sixth length of shaft (Fig. 362); style with lateral prominence at midlength of apical process (Fig. 368). Sumatra, Philippines, West Malaysia	<i>itys</i> sp. n. (p. 108)
-	Aedeagus with gonopore extending to near or just basad of midlength of shaft (Fig. 343); style without lateral prominence on apical process	132
132(131)	Aedeagus with small tubercles on posterior surface of shaft over distal half (Fig. 269). Borneo	<i>sibyl</i> sp. n. (p. 93)
-	Aedeagus without small tubercles on shaft	133
133(132)	Pygophore processes with ventral margin strongly dentate distally (Figs 405, 408)	134
-	Pygophore processes simple, non-dentate	137

- 134(133) Pygophore processes with apex slender, arched slightly dorsally and then ventrally (Fig. 394)..... 135
 - Pygophore processes with apex robust, turned ventrally (Fig. 408). Philippines
erato sp. n. (p. 115)
- 135(134) Pygophore processes with proximal and distal tooth of series larger than rest, the distal equal to or larger than proximal (Figs 394, 400) 136
 - Pygophore processes with proximal tooth of series much larger than rest (Fig. 405). Philippines, Borneo *ascanius* sp. n. (p. 114)
- 136(135) Aedeagus with shaft strongly recurved anteriorly, its lateral margins expanded keel-like over distal one-fourth (Fig. 393); pygophore processes with dentate distal half slender (Fig. 394); length less than 5.0 mm. Philippines, Borneo, West Malaysia
teucer sp. n. (p. 112)
 - Aedeagus with shaft only slightly recurved anteriorly, its lateral margins not expanded (Fig. 399); pygophore processes with dentate distal half more robust, plate-like (Fig. 400); length more than 5.0 mm. Borneo..... *harpalyce* sp. n. (p. 112)
- 137(133) Aedeagus with lamellate expansions on distal half of shaft (Fig. 353). Borneo
peteos sp. n. (p. 107)
 - Aedeagus with lamellate expansions on basal half of shaft (Fig. 344). Borneo
romulus sp. n. (p. 105)
- 138(4) Aedeagus robust, socle in lateral aspect as long as basal apodeme (Fig. 601); pygophore processes expanded shoe-like at apex (Fig. 604). Philippines *musaeus* sp. n. (p. 143)
 - Aedeagus slender, socle in lateral aspect considerably shorter than basal apodeme (Fig. 369); pygophore processes simple, if expanded then not as above 139
- 139(138) Aedeagus with shaft compressed anteroposteriorly, its lateral margins acuminate, its distal one-third strongly tapered in lateral aspect (Fig. 378). Borneo
protesilaus sp. n. (p. 109)
 - Aedeagus not as above 140
- 140(139) Forewings, and sometimes pronotum, speckled with dark brown spots. Philippines, Borneo, West Malaysia *ilioneus* sp. n. (p. 111)
 - Uniformly stramineous 141
- 141(140) Pygophore processes with apex expanded (Fig. 383). West Malaysia ... *serranus* sp. n. (p. 109)
 - Pygophore processes with apex acutely rounded or obliquely truncate (Fig. 372). Borneo..... *pandarus* sp. n. (p. 109)
- 142(2) Subgenital plates with row of hair-like setae absent from ventral margin 143
 - Subgenital plates with row of hair-like setae absent from dorsal margin, except for basal group, or from both dorsal and ventral margins 166
- 143(142) Aedeagus with a pair of apical or subapical processes on shaft (Fig. 801) 160
 - Aedeagus without processes, sometimes with lobes or lamellate expansions (Figs 823, 829) 144
- 144(143) Aedeagus with broad lamellate expansion on lateral margins of shaft over its distal two-thirds (Fig. 731). New Guinea *geryon* sp. n. (p. 161)
 - Aedeagus not as above 145
- 145(144) Pygophore with a group of hair-like setae ventrally near base (Fig. 827). Philippines
cycnus sp. n. (p. 177)
 - Pygophore without group of setae basally 146
- 146(145) Aedeagus robust, socle enlarged and equal to or greater than length of shaft in lateral aspect (Figs 735, 741) 152
 - Aedeagus not robust, socle shorter than shaft in lateral aspect (Fig. 721) 147
- 147(146) Aedeagus with gonopore extending to or basad of midlength of shaft, if less then anterior incision extending to midlength (Figs 713, 725, 822) 148
 - Aedeagus with both gonopore and anterior incision very short, neither reaching more than one-fifth length of shaft (Fig. 760). New Guinea *alceus* sp. n. (p. 165)
- 148(147) Aedeagus with lamellate expansions at apex of shaft (Fig. 822); pygophore processes short, robust (Fig. 824). Australia *samii* Evans (p. 176)
 - Aedeagus without lamellate expansions; pygophore processes elongate 149
- 149(148) Style with apical process expanded over distal half (Fig. 56). New Zealand specimens
adventitiosus Evans (p. 60)
 - Style with apical process of uniform width (Fig. 727) or tapering to apex from midlength (Fig. 724) 150

150(149)	Style with apical process of uniform width (Fig. 727). New Guinea ...	<i>viridinervis</i> Blöte (p. 160)
-	Style with apical process tapering to apex from midlength (Fig. 724)	151
151(150)	Pygophore processes expanded over distal half (Fig. 715); length 9·25 mm. New Guinea	<i>montanus</i> (Evans) (p. 158)
-	Pygophore processes not expanded over distal half, tapering to apex (Fig. 723); length 5·36 mm. New Guinea	<i>leda</i> sp. n. (p. 159)
152(146)	Aedeagus with anterior incision more than half length of gonopore (Fig. 735)	153
-	Aedeagus with anterior incision considerably less than half length of gonopore (Fig. 746)	154
153(152)	Aedeagus with posterior margin acutely ridged medially near base (Fig. 758); pygophore processes turned abruptly dorsoposteriorly near midlength with apex turned posteriorly (Fig. 756). New Guinea, New Britain	<i>apustulatus</i> Blöte (p. 165)
-	Aedeagus not ridged posteriorly; pygophore processes curving gradually dorsoposteriorly from midlength, apex not turned posteriorly (Fig. 737). New Britain, New Ireland	<i>aceses</i> sp. n. (p. 162)
154(152)	Pygophore processes straight, directed dorsoposteriorly throughout length, apex turned abruptly medially (Fig. 776, 777)	155
-	Pygophore processes not straight, not directed dorsoposteriorly throughout length, apex not turned medially	156
155(154)	Pygophore processes extending to midlength of pygophore lobe, apex acute (Figs 776, 777); aedeagus with posterior margin of socle concave (Fig. 773). New Guinea, New Britain	<i>tereus</i> sp. n. (p. 168)
-	Pygophore processes not extending to midlength of pygophore lobe, apex rounded with subapical spur (Figs 779, 780); aedeagus with posterior margin of socle not concave (Fig. 778). Solomon Islands	<i>ufens</i> sp. n. (p. 169)
156(154)	Pygophore processes directed posteriorly at base and curving gradually dorsoposteriorly (Fig. 748)	157
-	Pygophore processes directed posteriorly at base and turned abruptly dorsally or dorsoposteriorly (Figs 753, 771)	158
157(156)	Pygophore processes directed posteriorly in ventral aspect (Fig. 744); aedeagus with shaft strongly recurved, its anterior margin parallel with dorsal margin of socle (Fig. 741). Philippines	<i>thetis</i> sp. n. (p. 162)
-	Pygophore processes with apex turned slightly laterally in ventral aspect (Fig. 749); aedeagus with shaft less recurved, its anterior margin at angle with dorsal margin of socle (Fig. 746). Philippines	<i>tityos</i> sp. n. (p. 164)
158(156)	Pygophore processes turned dorsad near apex (Fig. 753) Borneo	<i>misenus</i> sp. n. (p. 165)
-	Pygophore processes turned dorsad at midlength or more basally (Figs 766, 771)	159
159(158)	Pygophore processes turned dorsad near base (Fig. 766); aedeagus with shaft strongly recurved and directed anteriorly (Fig. 763). New Britain	<i>antenor</i> sp. n. (p. 167)
-	Pygophore processes turned dorsad at midlength (Fig. 771); aedeagus with shaft less recurved and directed anterodorsally (Fig. 768). New Guinea	<i>orithyia</i> sp. n. (p. 167)
160(143)	Aedeagus with processes bifid, shaft laterally compressed with posterior margin acuminate medially over basal half (Figs. 795, 799). New Guinea	<i>menelaus</i> sp. n. (p. 172)
-	Aedeagus with processes not bifid or if so then shaft elongate and slender (Fig. 810)	161
161(160)	Aedeagus with processes directed dorsally (Figs. 783, 790)	162
-	Aedeagus with processes directed ventrally or posteroventrally (Figs 810, 818)	163
162(161)	Aedeagus with shaft elongate, 4-5 times length of basal apodeme (Fig. 790). New Guinea	<i>sabinus</i> sp. n. (p. 171)
-	Aedeagus with shaft shorter, 2 times length of basal apodeme (Fig. 783). New Guinea	<i>lavinia</i> sp. n. (p. 170)
163(161)	Aedeagus with processes reaching midlength of shaft (Figs 805, 818)	164
-	Aedeagus with processes not reaching midlength of shaft (Figs 800, 810)	165
164(163)	Pygophore processes with apex directed laterally (Fig. 807); length 4·64 mm; vertex flattened. Australia	<i>pallas</i> sp. n. (p. 174)
-	Pygophore processes with apex directed dorsally (Fig. 820); length 6-7 mm; vertex not flattened. Borneo	<i>diomede</i> sp. n. (p. 175)
165(163)	Aedeagus with socle extended ventrally, its lower margin level with or ventrad of basal articulation, gonopore with ventral margin distad of basal apodeme (Fig. 800); style without subapical spur on ventral margin (Fig. 804). New Guinea	<i>othrys</i> sp. n. (p. 173)
-	Aedeagus with socle not extended ventrally, its lower margin dorsad of basal articula-	

- tion, gonopore extending to level of basal apodeme (Fig. 810); style with subapical spur on ventral margin (Fig. 815). New Guinea, New Britain, Borneo... *zeus* sp. n. (p. 175)
- 166(142) Aedeagus with a pair of apical processes on shaft (Fig. 894) 167
- Aedeagus without processes, sometimes with lamellate expansions (Figs 851, 855) 169
- 167(166) Aedeagus with shaft very slender, directed ventrally at base and then turning dorsally, apical processes extending to midlength of shaft (Fig. 884); style without lamellate expansion on ventral margin (Fig. 887). Borneo *adrastus* sp. n. (p. 188)
- Aedeagus with shaft more robust, not directed ventrally at base, apical processes not reaching midlength of shaft (Fig. 879); style with lamellate expansion on ventral margin of apical process over its distal half (Fig. 883) 168
- 168(167) Aedeagus with apical processes directed ventrally, their apices turned slightly anteriorly (Fig. 893); style with acute projection subapically on ventral margin (Fig. 892). Philippines, Borneo *laodamia* sp. n. (p. 189)
- Aedeagus with apices of apical processes turned slightly posteriorly (Fig. 879); style without acute projection subapically on ventral margin (Fig. 883). Philippines *cyprian* sp. n. (p. 188)
- 169(166) Aedeagus robust, shaft very short, recurved anteriorly, basal apodeme very short (Fig. 864) 176
- Aedeagus less robust, sometimes elongate, shaft slender, long, directed dorsally, basal apodeme long (Figs 838, 842) 170
- 170(169) Aedeagus with triangular lamellate expansions subapically on posterior margin (Fig. 855); style with apical process turned abruptly dorsoposteriorly approximately two-thirds distance from base (Fig. 858). West Malaysia *eumenides* sp. n. (p. 182)
- Aedeagus and style not as above 171
- 171(170) Aedeagus with shaft terminating in a pair of lateral, distally acute, lamellate lobes extending distad of shaft (Figs 846, 847) 172
- Aedeagus with lamellate expansions not as above and not extending distad of shaft 174
- 172(171) Aedeagus with socle enlarged, its height exceeding that of basal apodeme, space between apical lobes V-shaped (Figs 846, 847) 173
- Aedeagus with socle not enlarged, its height less than that of basal apodeme, space between apical lobes U-shaped (Figs 851, 852). West Malaysia *janus* sp. n. (p. 182)
- 173(172) Pygophore processes extending to near posterior margin of pygophore lobes (Fig. 848). Borneo *vesta* sp. n. (p. 182)
- Pygophore processes not extending beyond midlength of pygophore lobes (Fig. 845). Java, Borneo *palinurus* sp. n. (p. 180)
- 174(171) Aedeagus with anterior incision approximately two-thirds length of gonopore (Fig. 830). Philippines *iulus* sp. n. (p. 178)
- Aedeagus with anterior incision less than half length of gonopore (Fig. 838) 175
- 175(174) Aedeagus with lateral margins expanded keel-like over distal third (Fig. 837). Philippines, Borneo, West Malaysia *anchises* sp. n. (p. 180)
- Aedeagus with lateral margins expanded keel-like over mid section and also subapically (Fig. 839). Sulawesi *alcides* sp. n. (p. 180)
- 176(169) Subgenital plates with long hair-like setae, at least basally on dorsolateral margin (Fig. 901) 177
- Subgenital plates without long hair-like setae but with scattered short setae (Figs 873, 874). Australia *brooksi* Evans (p. 186)
- 177(176) Aedeagus with shaft broad in lateral aspect, gonopore and anterior incision extending to near midlength of shaft (Fig. 864); style with apical process expanded over distal half (Fig. 866); colour stramineous 178
- Aedeagus with shaft narrow in lateral aspect, gonopore and anterior incision apical (Fig. 904); style with apical process not expanded over distal half, ventral margin sometimes acuminate or with small projection (Fig. 906); colour stramineous with dark brown spots on dorsum, forewings also transversely banded 180
- 178(177) Pygophore processes straight, directed dorsally and slightly posteriorly from base (Fig. 877). Bonin Islands *ogasawarensis* (Matsumura) (p. 186)
- Pygophore processes sinuate, directed posteriorly at least basally (Fig. 867) 179
- 179(178) Pygophore processes directed posteriorly to near apex, the latter turned dorsoposteriorly, ventral margin acuminate over distal half (Fig. 861). Philippines.... *neruus* sp. n. (p. 184)
- Pygophore processes directed posteriorly to near midlength, distal half turned dorsopos-

- teriorly, ventral margin with small spur-like projection subapically (Fig. 867). Philippines *tullus* sp. n. (p. 186)
- 180(177) Pygophore processes turned dorsally from base (Fig. 905). New Guinea ... *remus* sp. n. (p. 192)
- Pygophore processes directed posteriorly 181
- 181(180) Pygophore processes with distal half straight in lateral aspect (Fig. 899). New Guinea
dymas sp. n. (p. 191)
- Pygophore processes with distal half sinuate in lateral aspect (Fig. 909). Australia, New
Guinea *lentiginosus* (Kirkaldy) (p. 193)
- 182(1) Aedeagus with apical processes 183
- Aedeagus without apical processes 184
- 183(182) Aedeagus with three pairs of apical processes. New Guinea *telamon* sp. n. (p. 203)
- Aedeagus with one pair of apical processes. New Guinea *enyo* sp. n. (p. 204)
- 184(182) Aedeagus with shaft short, robust (Figs 912, 918) 185
- Aedeagus with shaft slender, elongate (Figs 924, 930) 186
- 185(184) Vertex raised above level of pronotum with its posterior margin declivous; pronotum
depressed anteriorly on each side of midline; scutellum transversely depressed at level
of scar; forewings with veins elevated and with additional cross veins; length 8.5 mm;
pygophore processes turned gradually dorsoposteriorly at midlength and slightly
expanded subapically. New Guinea *thestor* nom. n. (p. 194)
- Vertex, pronotum, scutellum and forewings not as above; length 7 mm; pygophore
processes turned abruptly dorsad immediately distad of midlength, not expanded
subapically. New Guinea *leto* sp. n. (p. 194)
- 186(184) Pygophore processes with elongate process arising mesally near midlength (Fig. 926);
apical process of style without subapical projection (Fig. 927). New Guinea
boschmai Blöte (p. 196)
- Pygophore processes not as above, sometimes with small subapical projection on dorsal
or lateral margin (Figs 948, 964); apical process of style with pronounced subapical
projection (Figs 947, 955), rarely absent (Fig. 963) 187
- 187(186) Pygophore processes turned ventrad distally, with 1-2 small subapical projections, or
acutely ridged (Figs 948, 954, 959) 188
- Pygophore processes not as above, slightly expanded subapically with or without
marginal serrations (Figs 932, 939) 191
- 188(187) Styles with apical process strongly expanded to midlength, abruptly narrowed to apex
over distal half (Fig. 947) 189
- Styles with apical process only slightly expanded to midlength, gradually narrowed to
apex over distal half (Figs 958, 963) 190
- 189(188) Styles with subapical projection on ventral margin elongate and slender (Fig. 947). New
Guinea, New Britain *xanthus* sp. n. (p. 200)
- Styles with subapical projection on ventral margin short and triangular (Fig. 955). New
Guinea *briseis* sp. n. (p. 202)
- 190(188) Styles with pronounced subapical projection on ventral margin (Fig. 958); pygophore
processes with subapical projection small, spur-like (Fig. 960). New Guinea
artemis sp. n. (p. 202)
- Styles without subapical projection on ventral margin (Fig. 963); pygophore processes
with subapical projection finger-like (Fig. 965). New Guinea *iris* sp. n. (p. 202)
- 191(187) Pygophore processes robust, sinuate and dorsally serrate over distal half (Fig. 932). New
Guinea *semele* sp. n. (p. 198)
- Pygophore processes not as above 192
- 192(191) Styles with apical process expanded to midlength, abruptly narrowed to slender distal
half, with small teeth on ventral margin at midlength (Fig. 940). New Guinea
nitens Blöte (p. 199)
- Styles with apical process expanded to distad of midlength, slender apical portion
relatively shorter, without teeth on ventral margin (Fig. 944). New Guinea
hermes sp. n. (p. 199)

***Batracomorpha angustatus* (Osborn)**

(Figs 1–5)

Bythoscopus angustatus Osborn, 1934a: 166. Holotype ♂, TONGA ISLANDS (BMNH) [examined].
Eurinoscopus punctatus Evans, 1940: 10. Holotype ♂, AUSTRALIA (QM) [examined]. **Syn. n.**

Length: ♂, 4.16–4.96 mm (mean 4.58 mm).

Punctures on forewings occasionally dark brown.

Male genitalia. Pygophore processes slender, straight or slightly sinuate, directed posteriorly, tapering gradually to acute apex. Styles with apical process markedly swollen over distal half, tapering to acute, dorsally hooked apex. Aedeagus simple; shaft directed dorsally; gonopore extending to just basad of midlength of shaft; anterior incision slightly shorter than gonopore.

REMARKS. This species differs from the majority in having the vertex flattened rather than continuously curved to the face. The pygophore processes are either straight, as illustrated here, or slightly sinuate, as illustrated previously (Knight, 1974), the two forms plus intermediates occurring together in Australia, New Zealand, New Caledonia, New Hebrides, Samoa and Tonga. Specimens from Fiji, Kermadecs, Philippines, Lesser Sunda Islands, Timor and Java show only the straight form. The configuration of the process depends to some extent on the aspect. Specimens from Sandakan Island, Timor and Java all have the shaft of the aedeagus distad of the lower limit of the gonopore slightly wider than normal whilst that from Sandakan Island also has the anterior incision slightly longer than the gonopore.

DISTRIBUTION. Australia*, Borneo*, Fiji*, Java*, Kermadecs, Lesser Sunda Islands*, New Caledonia, New Hebrides, New Zealand, Niue, Norfolk Island, Philippines*, Ryukyu Islands*, Samoa, Timor*, Tonga (* new records).

MATERIAL EXAMINED

Bythoscopus angustatus Osborn, holotype ♂, **Tonga Islands**: Vava'u, Neiafu, 1.iii.1925 (*P. A. Buxton & G. H. Hopkins*) (BMNH). *Eurinoscopus punctatus* Evans, holotype ♂, **Australia**: Queensland, Darling Downs, lucerne, 14.ix.1939 (*D. O. Atherton*) (QM).

Australia: 39 ♂, 11 ♀, New South Wales, Queensland, South Australia and Western Australia (BMNH, BPBM). **Borneo**: 1 ♂, Sabah (BPBM). **Fiji**: 13 ♂, 19 ♀, Kambara, Ovalau, Taveuni, Vanua Levu and Viti Levu (DSIR, BMNH, BPBM). **Java**: 1 ♂ (BPBM). **New Caledonia**: 3 ♂, 5 ♀ (BPBM). **New Hebrides**: 10 ♂, 13 ♀, Efate, Erromanga, Espiritu Santo and Malekula (BMNH, BPBM, SAM). **Philippines**: 28 ♂, 12 ♀, Basilan Island, Culion Island, Luzon and Palawan (BPBM, FMNH, USNM). **Ryukyu Islands**: 6 ♂, 5 ♀, Okinawa (FMNH). **Samoa**: 10 ♂, 1 ♀, Savaii and Tutuila (BPBM). **Sangeang Island**: 1 ♂ (BPBM). **Timor**: 1 ♂ (BPBM). **Tonga**: 25 ♂, 57 ♀, Eua, Tongatapu and Vavau (BPBM).

***Batracomorpha atrifrons* (Metcalf)**

(Figs 6–10)

Bythoscopus atrifrons Metcalf, 1946: 136. Holotype ♂, GUAM (BPBM) [examined].

Length: ♂, 3.75–4.00 mm (mean 3.87 mm).

Face, except clypellus, lora, gena and ring round each ocellus, dark brown.

Male genitalia. Pygophore processes simple, slender, straight, directed posteriorly, tapered to acute apex with latter sometimes turned slightly dorsad. Style with apical process slightly expanded over distal half, tapering to acute dorsally hooked apex. Aedeagus simple; shaft slender, directed dorsally; gonopore extending approximately two-thirds length of shaft; anterior incision extending slightly less than gonopore.

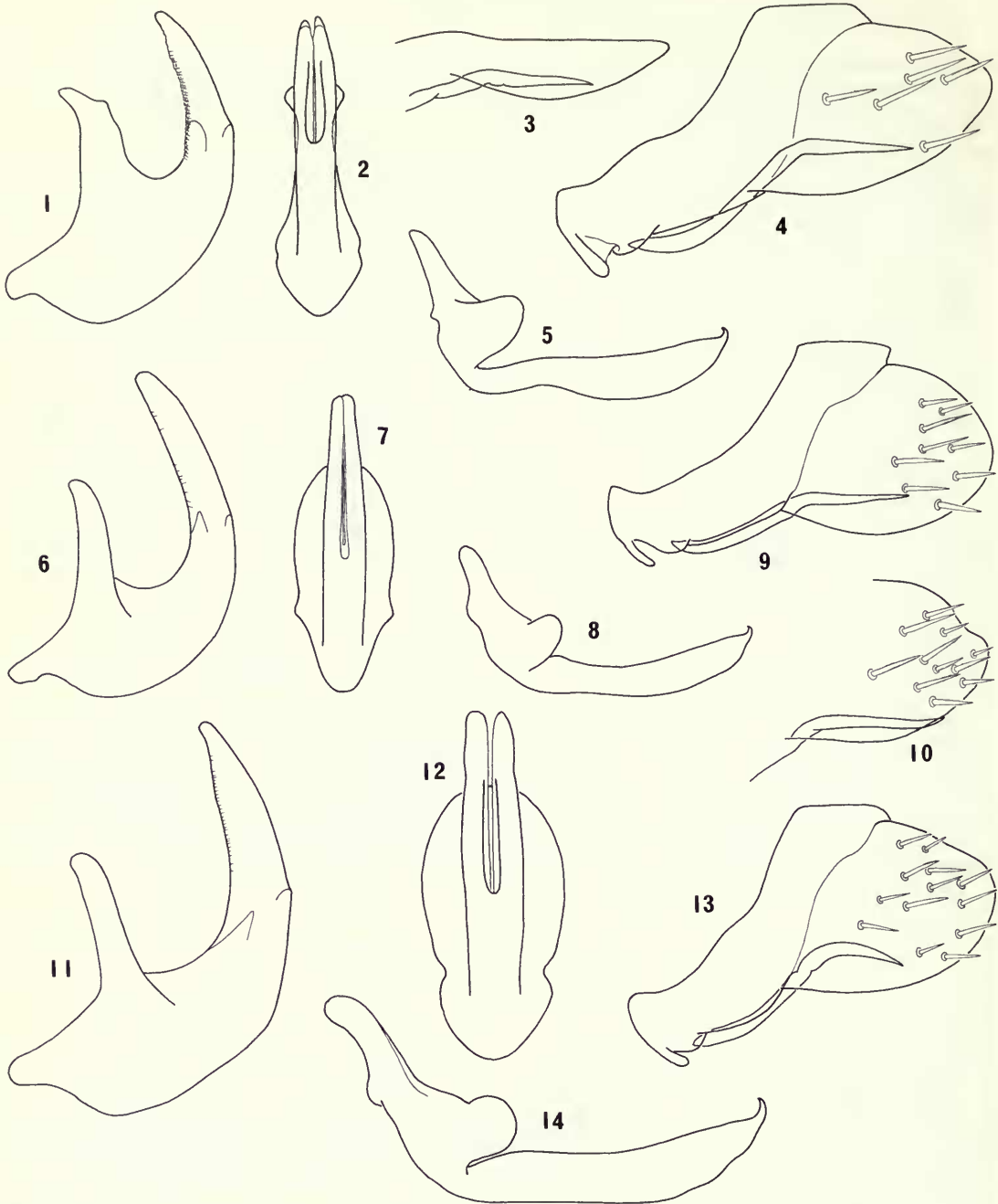
REMARKS. This species, known only from Guam and Saipan, is similar to *angustatus* but is slightly smaller and differs also in having a dark brown face, a less robust aedeagus and a more slender style.

DISTRIBUTION. Guam, Saipan.

MATERIAL EXAMINED

Bythoscopus atrifrons Metcalf, holotype ♂, **Guam**: Barrigada, 22.vii.1936 (*O. H. Swezey*) (BPBM).

Guam: 3 ♂ (BPBM).



Figs 1-14 1-5, *Batracomorpha angustatus* (Philippine specimens). (1, 2) aedeagus; (3) left pygophore lobe and process, ventral view; (4) pygophore; (5) style. 6-10, *B. atrifrons* (Guam specimens). (6, 7) aedeagus; (8) style; (9) pygophore (Yigo and Barrigada); (10) pygophore lobe and process (Mt Lamlam and Upi Trail). 11-14, *B. charybdis*: (11, 12) aedeagus; (13) pygophore; (14) style. (For further explanation see 'Techniques and methods'.)

***Batracomorphus charybdis* sp. n.**

(Figs 11–14)

Length: ♂, 4.56 mm

Vertex, pronotum, scutellum and forewings speckled with small dark brown tubercles, those on forewings interspersed with small circular unpigmented areas.

Male genitalia. Pygophore processes short, directed posteriorly, slightly arched, tapering to acute apex. Styles with apical process only slightly expanded over distal half, tapering to acute, dorsally hooked apex. Aedeagus simple, shaft directed dorsally and tapering to apex in lateral aspect; gonopore extending approximately three-fourths length of shaft; anterior incision extending slightly more basad than gonopore.

REMARKS. This species is closely related to *angustatus* and *atrifrons* but differs in the presence of the dark brown speckling on its dorsal surface, a more robust and arched pygophore process and the relative lengths of the gonopore and anterior incision on the aedeagus.

MATERIAL EXAMINED

Holotype ♂, **Philippines**: Luzon, Camarines Sur, Mt Isarog, Pili, 800 m, 20.iv.1965 (*H. M. Torrevillas*) (BPBM, Type No. 12, 521).

***Batracomorphus collinus* (Osborn) comb. n.**

(Figs 15–18)

Bythoscopus collinus Osborn, 1934b: 242. Holotype ♀, MARQUESAS ISLANDS (BPBM) [examined].

Bythoscopus pellucidus Osborn, 1934b: 242. Holotype ♀, MARQUESAS ISLANDS (BPBM) [examined]. **Syn. n.**

Length: ♂, 4.48–5.28 mm (mean 4.80 mm).

Clypeus, face between eyes, and sometimes clypellus, dark brown, face rarely uniformly stramineous; forewings rarely speckled with small dark brown spots.

Head equal to or slightly wider than pronotum; eyes more prominent than usual.

Male genitalia. Pygophore processes small, finger-like, membranous, directed posteriorly. Styles with apical process expanded slightly over distal half, tapering to acute, dorsally hooked apex. Aedeagus with shaft directed dorsally, curving slightly anteriorly; gonopore extending to just basad of midlength; anterior incision shorter than gonopore, extending to midlength.

REMARKS. This species is closely related to *maculatus*, also from the Marquesas Islands. They both differ from other species in the genus, except *punctatus*, by having the head much wider in relation to the pronotum than normal and in the eyes being more prominent. They also have a reduced and membranous pygophore process which is rare for the genus and in the Pacific area is found elsewhere only in the Australian *brooksi*.

DISTRIBUTION. Marquesas Islands.

MATERIAL EXAMINED

Bythoscopus collinus Osborn, holotype ♀, **Marquesas Islands**: Nuku Hiva, Tapuaooa, 915 m, 18.vi.1931 (*Le Bronnec & H. Tauraa*) (BPBM). *Bythoscopus pellucidus* Osborn, holotype ♀, **Marquesas Islands**: Nuku Hiva, Pukoke, Tunoa Ridge, 1063 m, 22.x.1929 (*Mumford & Adamson*) (BPBM).

Marquesas Islands: 31 ♂, Nuku Hiva and Uapou (BPBM).

***Batracomorphus maculatus* (Osborn) comb. n.**

(Figs 19–22)

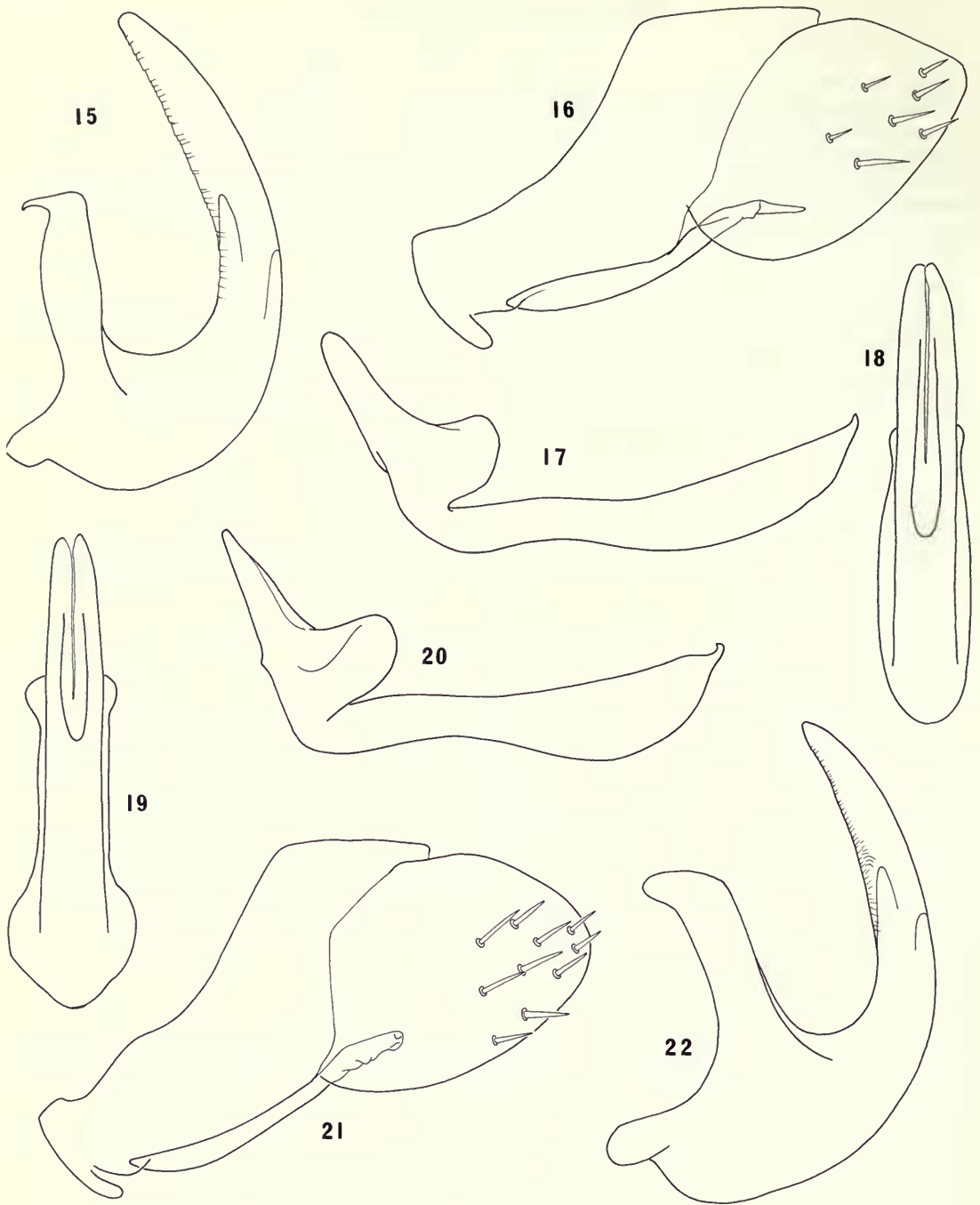
Bythoscopus maculatus Osborn, 1934b: 243. Holotype ♀, MARQUESAS ISLANDS (BPBM) [examined]

Length: ♂, 5.0–5.5 mm (mean 5.2 mm).

Clypeus and maxillary plates, rarely entire face, usually dark brown; apex of clavus, area of clavus adjacent to apex of scutellum, a transverse band at midlength of forewings and another across distal half of subapical cells dark brown, sometimes extending over greater area and rarely absent.

Head as wide as pronotum, or slightly narrower; eyes slightly more prominent than normal.

Male genitalia. Pygophore processes short, membranous, finger-like, directed posteriorly, indistinct.



Figs 15–22 15–18, *Batracomorpha collinus* (allotype). (15) aedeagus; (16) pygophore; (17) style; (18) aedeagus. 19–22, *B. maculatus* (paratype). (19) aedeagus; (20) style; (21) pygophore; (22) aedeagus. (For further explanation see 'Techniques and methods'.)

Subgenital plates normal, as in *harpago*, but with setae on lobe arranged in uniseriate row and those on medial surface not extending along ventral margin. Styles with apical process strongly expanded over distal half, tapering to acute, dorsally hooked apex. Aedeagus with shaft directed dorsally, curving slightly anteriorly; gonopore extending to just basad of midlength; anterior incision shorter than gonopore, extending to near midlength.

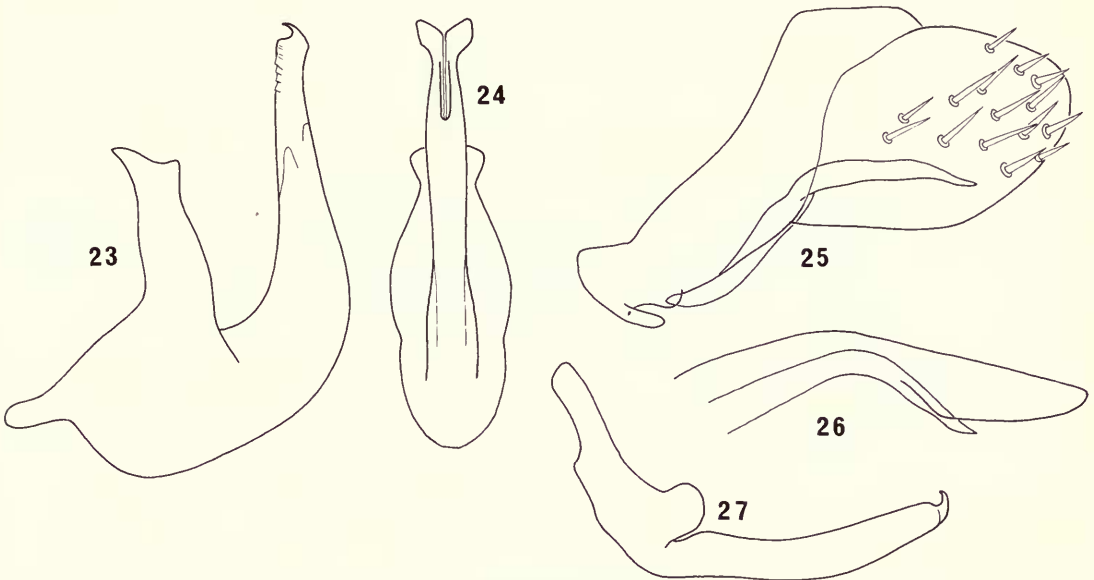
REMARKS. This species is closely related to *collinus* but differs in the coloration of the face and forewings, and in having a smaller and less distinct pygophore process, more expanded apical process on the style and more heavily setose subgenital plates. Both species are unique within the genus in having a relatively wider head than normal and more prominent eyes, features they share with only one other species, *punctatus*.

DISTRIBUTION. Marquesas Islands.

MATERIAL EXAMINED

Bythoscopus maculatus Osborn, holotype ♀, Marquesas Islands: Hiva Oa, Kopaafaa, 854 m, 25.ii.1930 (Mumford & Adamson) (BPBM).

Marquesas Islands: 8 ♂, Hiva Oa and Tahuata (BPBM).



Figs 23–27 *Batracomorphus caeneus* (West Malaysian specimens). 23, 24, aedeagus; 25, pygophore; 26, left pygophore lobe and process, ventral view; 27, style. (For further explanation see 'Techniques and methods'.)

Batracomorphus caeneus sp. n.

(Figs 23–27)

Length: ♂, 4.32–4.64 mm (mean 4.44 mm).

Male genitalia. Pygophore processes slender, directed posteriorly, arched in ventral aspect and sometimes in lateral aspect, apex acute. Styles with apical process not expanded distally, terminating in acute, dorsally hooked apex. Aedeagus robust basally; shaft relatively short, directed dorsally, tapering to apex in lateral aspect, terminating in pair of small lamellate lobes; gonopore extending approximately one-fourth length of shaft; anterior incision extending slightly more basad than gonopore.

REMARKS. This species shows some slight resemblance to *daedalus* from Sulawesi in the possession of terminal lobes on the aedeagus but is smaller and differs in the shape of the aedeagus, styles and pygophore processes.

MATERIAL EXAMINED

Holotype ♂, **West Malaysia**: Kuala Lumpur, 1.xi.1937 (*N. C. E. Miller*) (BMNH).

Paratypes. **Borneo**: 1 ♂, Sarawak (BPBM). **West Malaysia**: 3 ♂ (BMNH).

Batracomorphus charis sp. n.

(Figs 28–32)

Length: ♂, 4.32–4.40 mm (mean 4.33 mm).

Male genitalia. Pygophore processes slender, directed posteriorly, sinuate, apex acute and turned mesally or ventromesally. Styles with apical process slightly expanded over distal half, tapering to acute, dorsally hooked apex. Aedeagus simple; shaft directed dorsally; gonopore and anterior incision of approximately equal length, extending to just basad of midlength of shaft.

REMARKS. This species is similar to *pentheus* from the Philippines but has a more robust aedeagus with the gonopore and anterior incision of equal length. It is known only from the type-locality.

MATERIAL EXAMINED

Holotype ♂, **Borneo**: Sabah, Tawau, Quoin Hill, 15–20.vii.1962 (*H. Holtmann*) (BPBM, Type No. 12, 522).

Paratypes. **Borneo**: 5 ♂, Sabah (BPBM).

Batracomorphus pentheus sp. n.

(Figs 33–37)

Length: ♂, 4.16 mm.

Male genitalia. Pygophore processes elongate, slender, apex acute, directed dorsoposteriorly over basal half and then curving posteriorly, sinuate in ventral aspect with apex turned medially. Styles with apical process slender, not or little expanded over distal half, tapering to acute, dorsally hooked apex. Aedeagus simple; shaft directed dorsally, tapering to apex in lateral aspect; gonopore extending to near midlength of shaft; anterior incision shorter than gonopore, extending approximately two-fifths length of shaft.

REMARKS. This species is similar to *charis* from Borneo but has a more slender aedeagus with the anterior incision shorter than the gonopore.

MATERIAL EXAMINED

Holotype ♂, **Philippines**: Luzon, Camarines Sur, Mt Isarog, Pili, 700 m, 28.iv.1965 (*H. M. Torrevillas*) (BPBM, Type No. 12, 523).

Batracomorphus briareus sp. n.

(Figs 38–42)

Length: ♂, 4.16–4.40 mm (mean 4.27 mm).

Pronotum sometimes speckled with small dark brown spots.

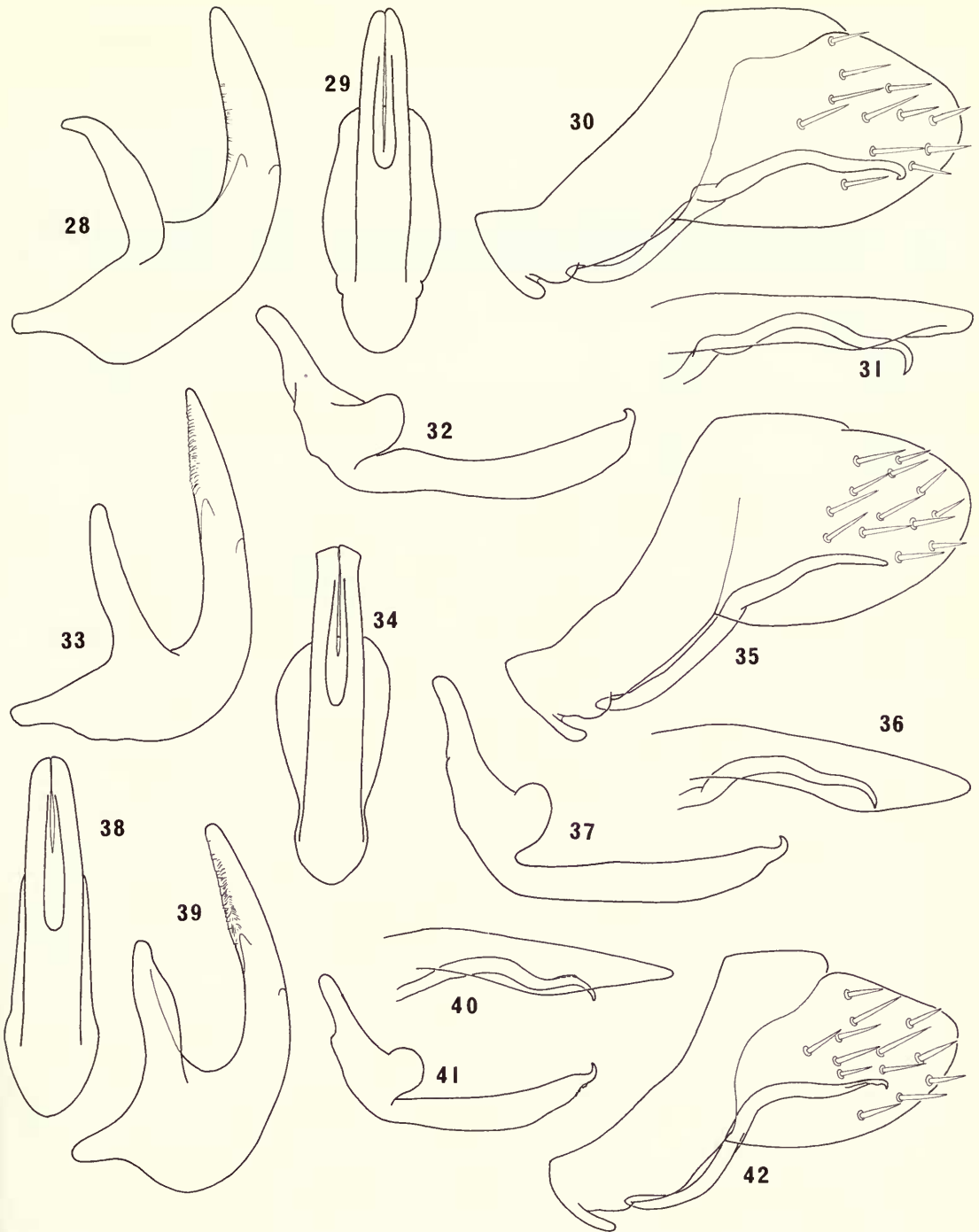
Male genitalia. Pygophore processes slender, directed posteriorly, sinuate in ventral aspect and sometimes also in lateral aspect, tapering gradually to acute apex with latter turned ventrally, mesally or ventromesally, ventrolateral margin acutely ridged subapically. Styles with apical process expanded over distal half, tapering to acute dorsally hooked apex, ventral margin sometimes very slightly ridged subapically. Aedeagus simple; shaft slender, directed dorsally; gonopore extending to just basad of midlength of shaft; anterior incision shorter than gonopore, extending approximately one-third length of shaft.

REMARKS. This species is sympatric with *angustatus* but can be distinguished by its more slender aedeagus, less expanded style and shape of the pygophore processes.

MATERIAL EXAMINED

Holotype ♂, **Philippines**: Luzon, Mt Makiling (*Baker*) (USNM).

Paratypes. **Philippines**: 7 ♂, Luzon and Palawan (BPBM, USNM, ZM).



Figs 28–42 28–32 *Batracomorphus charis*. (28, 29) aedeagus; (30) pygophore; (31) left pygophore lobe and process, ventral view; (32) style. 33–37, *B. pentheus*. (33, 34) aedeagus; (35) pygophore; (36) left pygophore lobe and process, ventral view; (37) style. 38–42, *B. briareus*. (38, 39) aedeagus; (40) left pygophore lobe and process, ventral view; (41) style; (42) pygophore. (For further explanation see 'Techniques and methods'.)

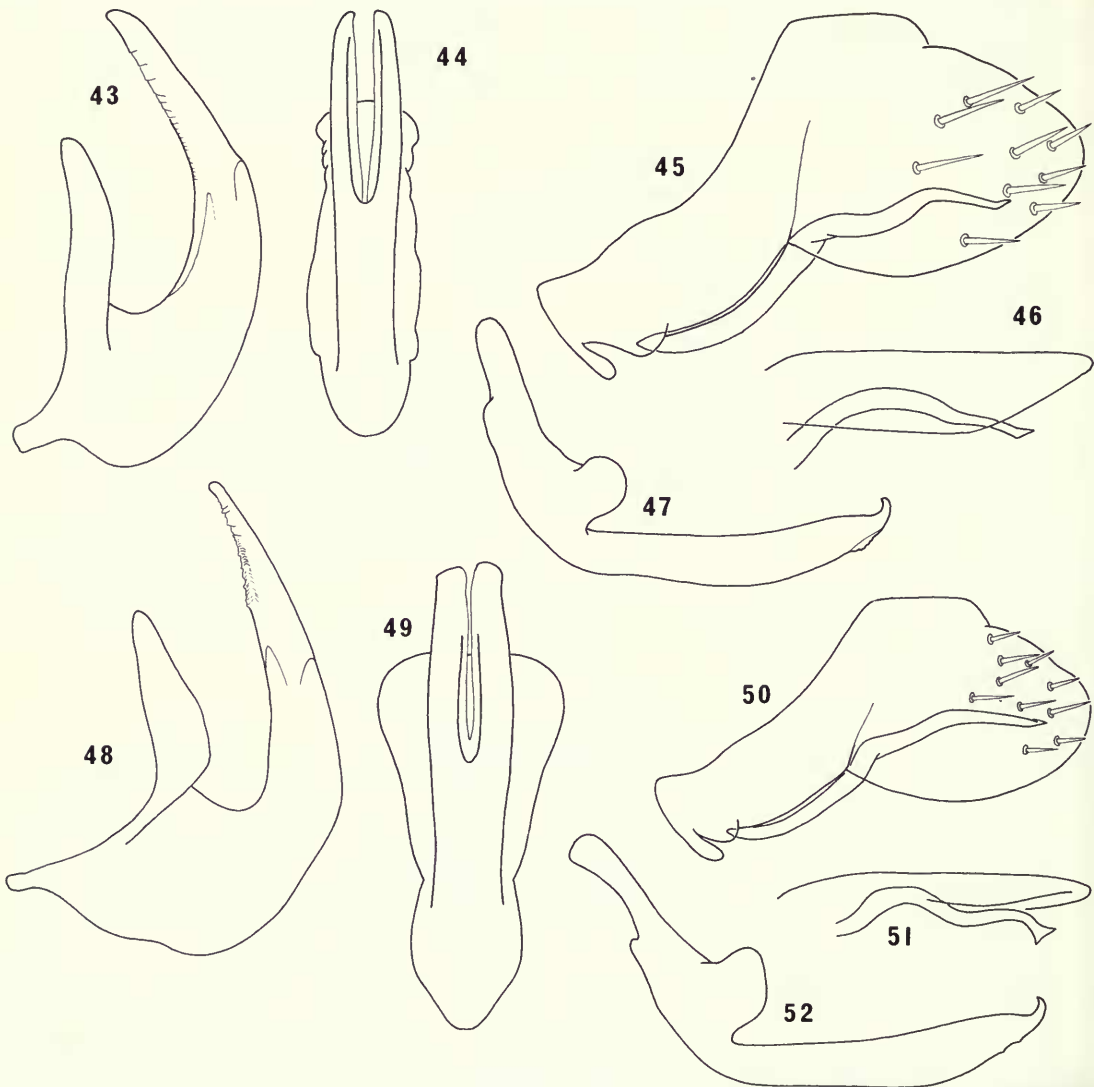
***Batracormorphus deiphobus* sp. n.**

(Figs 43–47)

Length: ♂, 5.12 mm.

Male genitalia. Pygophore processes slender, sinuate, directed posteriorly, tapering gradually to acute apex. Styles with apical process slightly expanded over midlength, tapering to acute dorsally hooked apex, a small lamellate expansion subapically on ventral margin. Aedeagus simple; shaft directed dorsally, curving anterodorsally at midlength; gonopore extending to midlength; anterior incision extending slightly more basad than gonopore.

REMARKS. This species is similar to the Philippine species *pentheus* and *briareus* in having a sinuate pygophore process but is distinguished by the recurved shaft of the aedeagus and the relative lengths of the gonopore and anterior incision.



Figs 43–52 43–47, *Batracormorphus deiphobus*. (43, 44) aedeagus; (45) pygophore; (46) left pygophore lobe and process, ventral view; (47) style. 48–52, *B. inachus*. (48, 49) aedeagus; (50) pygophore; (51) left pygophore lobe and process, ventral view; (52) style. (For further explanation see 'Techniques and methods'.)

MATERIAL EXAMINED

Holotype ♂, **West Malaysia**: Perak, Larut Hills, 1128 m, 17.ii.1932 (*H. M. Pendlebury*) (BMNH).

Batracomorphus inachus sp. n.

(Figs 48–52)

Length: ♂, 4.16–4.64 mm (mean 4.40 mm).

Forewing punctures faintly brown.

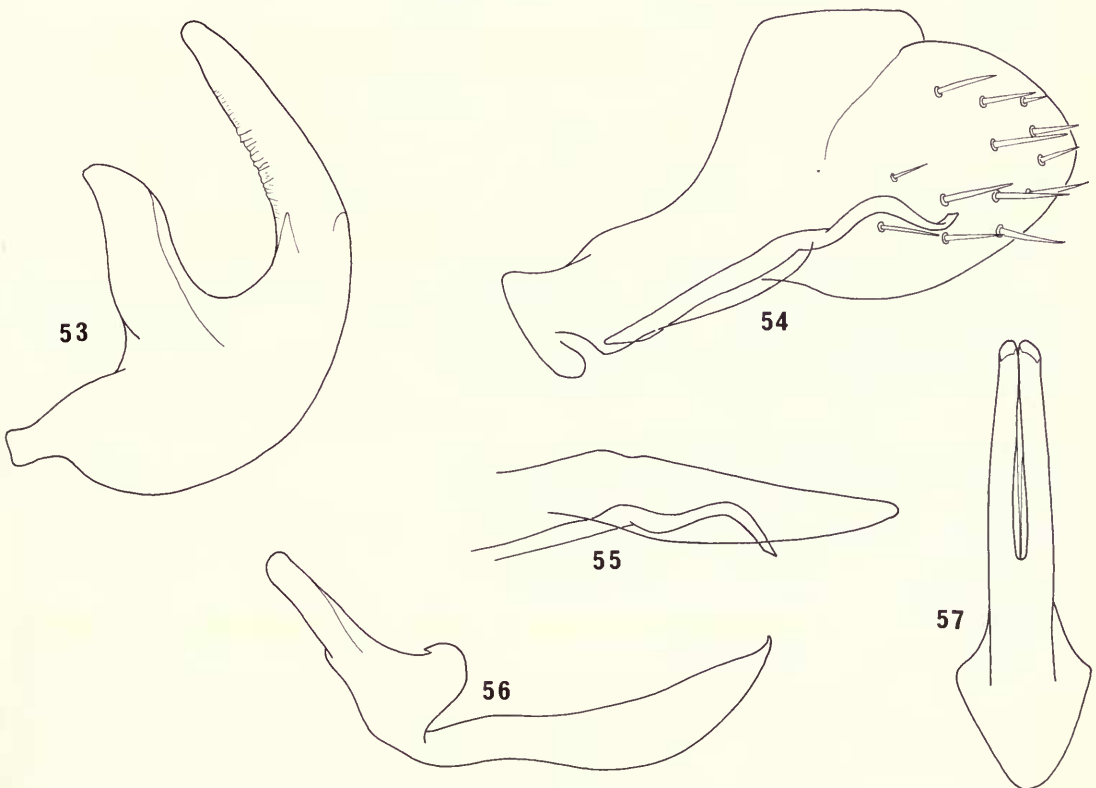
Male genitalia. Pygophore processes slender, directed posteriorly, slightly arched in lateral aspect, sinuate in ventral aspect and sometimes in lateral aspect, apex slightly expanded and truncate. Styles with apical process slightly expanded over distal half, tapering to acute dorsally hooked apex. Aedeagus simple; shaft directed dorsally, strongly tapered to apex in lateral aspect; gonopore extending to near midlength of shaft; anterior incision slightly shorter than gonopore.

REMARKS. This species is similar to *charis*, *pentheus* and *deiphobus* in having a sinuate pygophore process but may be distinguished by the expanded apex to its process as well as its strongly tapered aedeagus and the presence of brown punctures on the forewings. It is known only from eastern Mindanao.

MATERIAL EXAMINED

Holotype ♂, **Philippines**: Mindanao, Misamis Or., Balason, 4–5.iv.1960 (*W. Torrevillas*) (BPBM, Type No. 12,524).

Paratypes. **Philippines**: 3 ♂, Mindanao (BPBM, FMNH).



Figs 53–57 *Batracomorphus adventitosus* (New Zealand specimens). 53, aedeagus; 54, pygophore; 55, left pygophore lobe and process, ventral view; 56, style; 57, aedeagus. (For further explanation see 'Techniques and methods'.)

***Batracomorpha adventitiosus* Evans**

(Figs 53–57)

Batracomorpha adventitiosus Evans, 1966: 207. Holotype ♂, NEW ZEALAND (DSIR) [examined].

Length: ♂, 4.00–5.20 mm (mean 4.49 mm).

Colour pale greenish yellow or stramineous, sometimes reddish, sometimes tinged or mottled with dark brown.

Male genitalia. Pygophore processes slender, directed posteriorly, spirally twisted, apex turned medially and obliquely truncate to acute. Subgenital plates normal in shape, as in *harpago*, but with setae absent from medial and ventral surfaces in New Zealand specimens. Styles with apical process strongly expanded over distal half, tapering to acute, dorsally hooked apex. Aedeagus simple, robust basally; shaft directed dorsally, curving anterodorsally; gonopore extending approximately two-thirds length of shaft; anterior incision equal in length to gonopore.

REMARKS. This species is of interest in having the head only very slightly narrower than the pronotum and the distribution of setae on the subgenital plates reduced in New Zealand specimens. It is sympatric with *angustatus* over the more southern part of the latter's range but may be distinguished by the shape of the pygophore processes.

DISTRIBUTION. Australia*, New Hebrides*, New Zealand (* new records).

MATERIAL EXAMINED

Batracomorpha adventitiosus Evans, holotype ♂, New Zealand: Auckland Province, Whangarei, 13.xii.1921 (*J. G. Myers*) (DSIR).

Australia: 15 ♂, 9 ♀, New South Wales, Northern Territory and Western Australia (BMNH, WADA). **New Hebrides:** 9 ♂, 11 ♀, Ambrym, Efate and Malekula (BMNH, BPBM, SAM). **New Zealand:** 43 ♂, 2 ♀, North Island and South Island (BMNH).

***Batracomorpha dryas* (Kirkaldy)**

(Figs 58–63)

Eurinoscopus dryas Kirkaldy, 1906: 348. Holotype ♂, AUSTRALIA (BPBM) [examined].

Length: ♂, 4.24–4.72 mm (mean 4.48 mm).

Forewings sometimes very faintly mottled with dark brown.

Male genitalia. Pygophore processes slender, directed posteriorly or dorsoposteriorly, curving medially, apex bifid with branches short and of approximately equal length or ventral one slightly larger, each acute apically. Styles with apical process expanded over distal half, tapering to acute dorsally hooked apex. Aedeagus simple; shaft directed dorsally; gonopore extending approximately three-fourths length of shaft; anterior incision extending slightly more basad than gonopore.

REMARKS. The single specimen from New Caledonia has the ventral branch at the apex of the pygophore process smaller than the other and, in addition, lacks dark brown mottling on the forewings. The more ventral position of the process, as shown in Fig. 63, is abnormal.

DISTRIBUTION. Australia, New Caledonia* (* new record).

MATERIAL EXAMINED

Eurinoscopus dryas Kirkaldy, holotype ♂, Australia: Queensland, Bundaberg, 9.xii.1904 (*Koebele*) (BPBM).

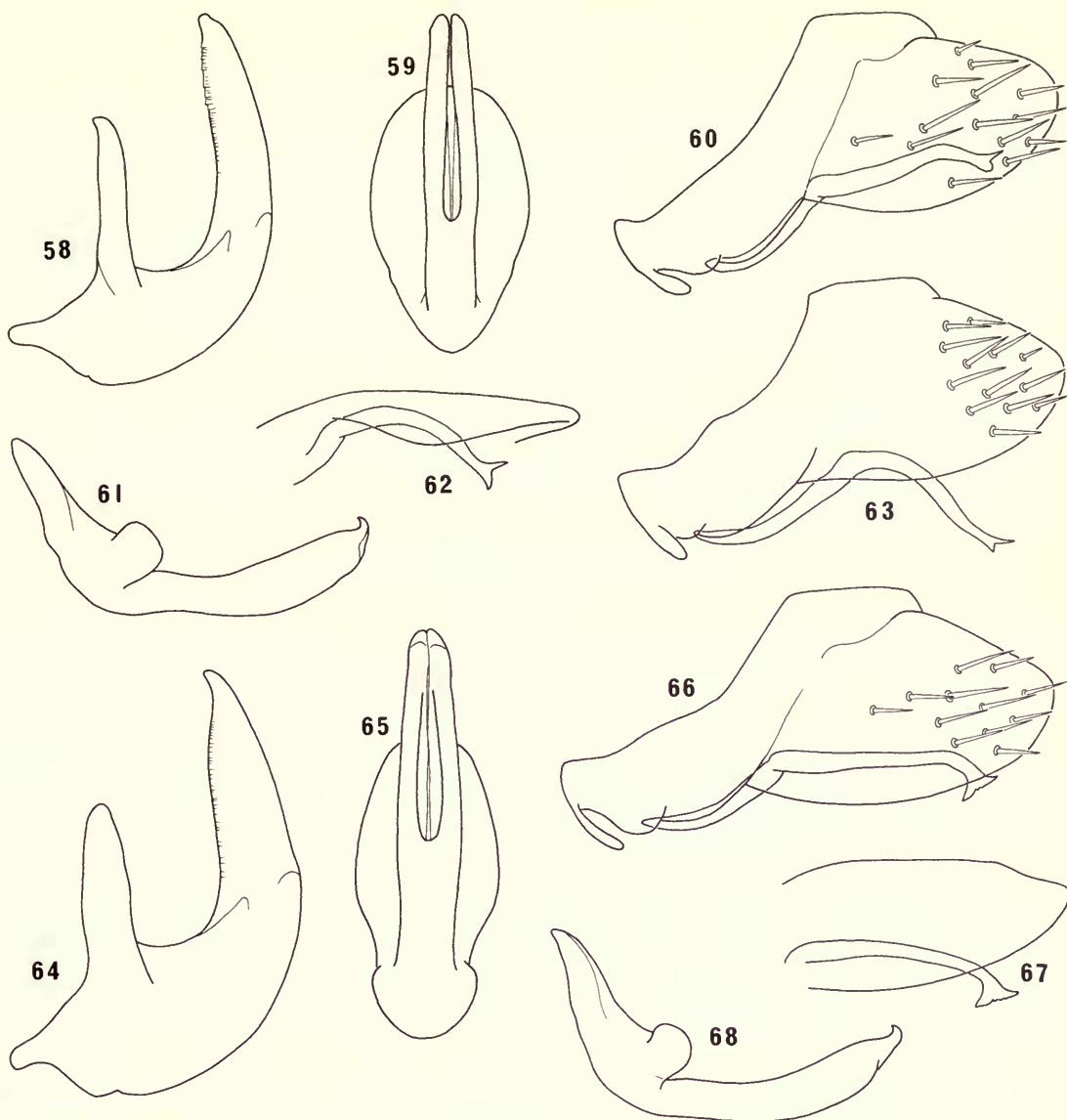
Australia: 5 ♂, 1 ♀, New South Wales and Queensland (AMNH, BMNH, BPBM). **New Caledonia:** 1 ♂, (BPBM).

***Batracomorpha ancus* sp. n.**

(Figs 64–68)

Length: ♂, 4.88–4.96 mm (mean 4.94 mm).

Male genitalia. Pygophore processes slender, directed posteriorly, apex turned ventrally, expanded lamellate and truncate. Styles with apical process only very slightly expanded over distal half, tapering to acute dorsally hooked apex. Aedeagus simple; shaft directed dorsally, tapering to apex in lateral aspect;



Figs 58–68 58–63, *Batracomorphus dryas*. (58, 59) aedeagus; (60) pygophore (Australia), normal shape; (61) style; (62) left pygophore lobe and process (Australia), normal shape, ventral view; (63) pygophore (New Caledonia). 64–68, *B. ancus*. (64, 65) aedeagus; (66) pygophore; (67) left pygophore lobe and process, ventrolateral view; (68) style. (For further explanation see 'Techniques and methods'.)

gonopore extending approximately two-thirds length of shaft; anterior incision extending slightly more basad than gonopore.

REMARKS. This species is similar to *dryas* from Australia and New Caledonia but has a more robust aedeagus. The pygophore process is also expanded and truncate apically instead of bifid. It is known only from western Mindanao and Basilan.

MATERIAL EXAMINED

Holotype ♂, **Philippines**: Mindanao, Dapitan (*Baker*) (USNM).

Paratypes. **Philippines**: 5 ♂, 6 ♀, Basilan Island and Mindanao (USNM).

***Batracomorpha ilia* sp. n.**

(Figs 69–73)

Length: ♂, 3.92–4.16 mm (mean 4.00 mm).

Male genitalia. Pygophore processes filiform, directed posteriorly, curving dorsoposteriorly throughout length or over distal portion, apex acute. Styles with apical process expanded over distal half, abruptly narrowed to acute, dorsally hooked apex. Aedeagus simple; shaft directed dorsally; gonopore extending to near midlength of shaft; anterior incision extending slightly more basad than gonopore.

REMARKS. This species is similar to *sarpedon* and *cocles* in the shape of the pygophore process but is smaller than either. It differs from *sarpedon* also in having a relatively longer pygophore process and in the absence of dark brown spots on the forewings. It differs from *cocles*, in addition to size, by its more slender aedeagus, the absence of a subapical expansion on the style and a relatively longer and more curved pygophore process.

MATERIAL EXAMINED

Holotype ♂, **Philippines**: Culion Island, 6 km W. of Culion, 13.vi.1962 (*H. Holtmann*)(BPBM, Type No. 12,525).

Paratypes. **Borneo**: 6 ♂, Sabah (BPBM). **Philippines**: 104 ♂, 12 ♀, Balabac, Busuanga, Culion, Mindanao and Negros (AMNH, BPBM).

***Batracomorpha sarpedon* sp. n.**

(Figs 74–77)

Length: ♂, 4.56–5.04 mm (mean 4.75 mm).

Forewings with widely spaced small dark brown spots, sometimes extending onto posterolateral corners of pronotum.

Vertex flat.

Male genitalia. Pygophore processes slender, directed posteriorly, curving slightly dorsoposteriorly distally to variable degree, apex acute. Styles with apical process expanded over distal half, tapering abruptly to narrow apical portion and terminating in acute, dorsally hooked apex. Aedeagus simple; shaft directed dorsally, curving slightly anteriorly; gonopore extending to just basad of midlength; anterior incision extending to just basad of gonopore.

REMARKS. This species differs from most in having the vertex flat rather than continuously curved to the face. It is similar to *acrisius* from New Caledonia but is larger and with dark brown spots on the forewings. The pygophore processes are also relatively shorter in the present species and lack a subapical keel. It also resembles the Philippine species *ilia* and *cocles* but differs from the former in being larger, and from both in having dark brown spots on the forewings and a relatively shorter pygophore process.

MATERIAL EXAMINED

Holotype ♂, **Australia**: N.S.W., Cabramatta, Georges River Valley, 3.xi.1962 (*M. I. Nikiitin*) (BMNH).

Paratypes. **Australia**: 11 ♂, 11 ♀, New South Wales (BMNH).

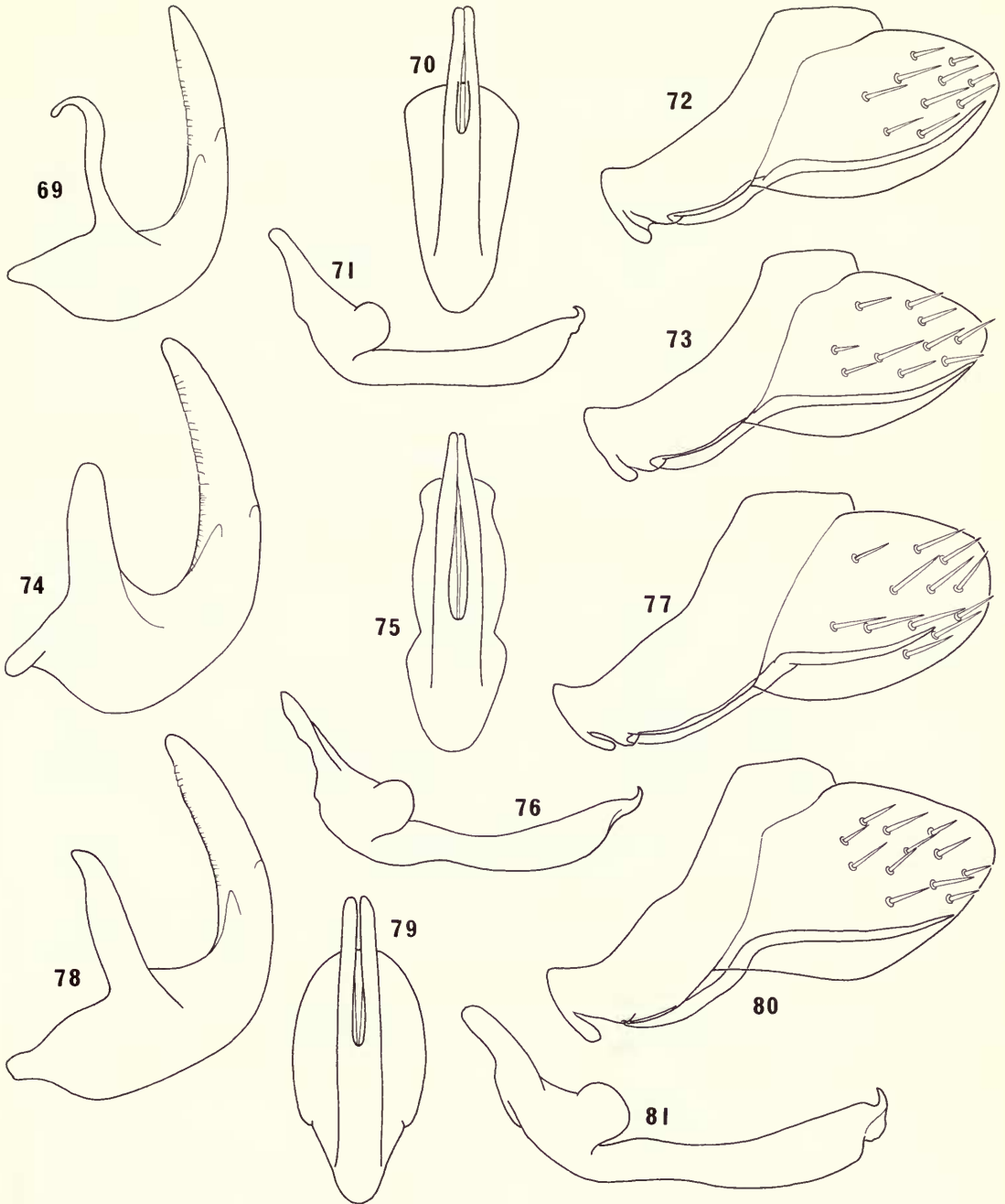
***Batracomorpha cocles* sp. n.**

(Figs 78–81)

Length: ♂, 4.88–4.96 mm (mean 4.92 mm).

Male genitalia. Pygophore processes elongate, filamentous, directed posteriorly, apex acute and turned slightly dorsally. Styles with apical process strongly expanded over distal half, abruptly narrowed subapically to acute dorsally hooked apex, a lamellate expansion subapically on ventral margin, semicircular or triangular in shape. Aedeagus simple; shaft directed dorsally, curving slightly anteriorly; gonopore extending to near midlength; anterior incision slightly longer than gonopore.

REMARKS. The extent to which the pygophore process is turned dorsally at its apex varies between individuals. When viewed from a dorsolateral aspect the extreme apex of the process is seen to be turned posteriorly, resembling in this respect the condition present in *helenus* but to a less pronounced degree. The present species is similar to *ilia* from the Philippines and Borneo

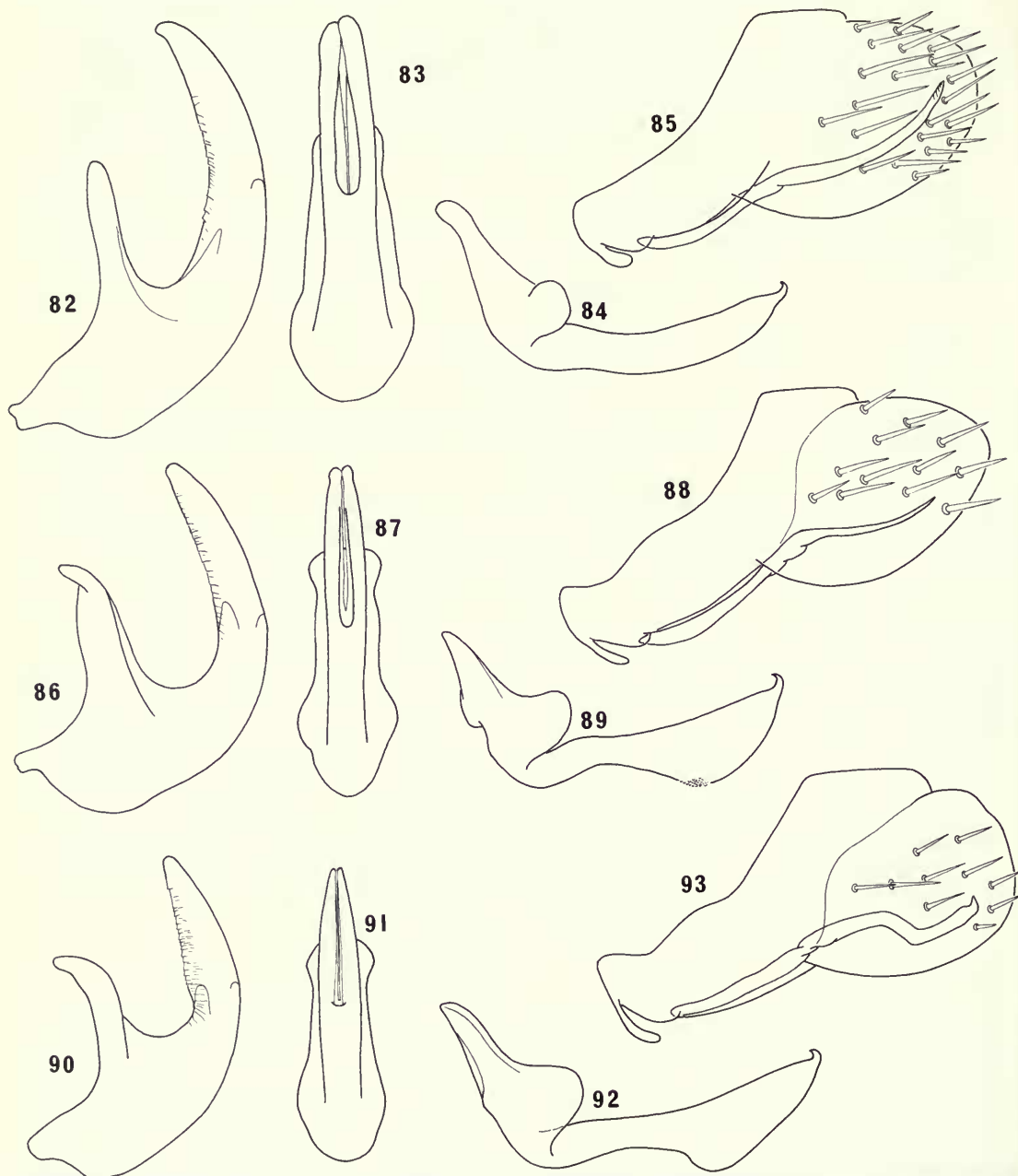


Figs 69–81 69–73, *Batracomorphus ilia* (Philippine specimens). (69, 70) aedeagus; (71) style; (72) pygophore, normal shape; (73) pygophore. 74–77, *B. sarpedon*. (74, 75) aedeagus; (76) style; (77) pygophore. 78–81, *B. cocles* (Philippine specimens). (78, 79) aedeagus; (80) pygophore; (81) style. (For further explanation see 'Techniques and methods'.)

but is larger with the aedeagus more robust, a subapical expansion on the style and the pygophore processes relatively shorter and less curved. It is similar also to *calliope* from Sarawak but is larger and with a more robust and anteriorly curved aedeagus.

MATERIAL EXAMINED

Holotype ♂, **Borneo**: Sabah, Tenompok, 10–14.ii.1959 (*T. C. Maa*) (BPBM, Type No. 12,526).
Paratypes. **Philippines**: 1 ♂, Palawan (ZM).



Figs 82–93 82–85, *Batracomorpha hecate*. (82, 83) aedeagus; (84) style; (85) pygophore. 86–89, *B. palicus*. (86, 87) aedeagus; (88) pygophore; (89) style. 90–93, *B. hamadryas*. (90, 91) aedeagus; (92) style; (93) pygophore. (For further explanation see 'Techniques and methods'.)

***Batracomorphus hecate* sp. n.**

(Figs 82–85)

Length: ♂, 3.84–4.16 mm (mean 4.00 mm).

Vertex flat.

Male genitalia. Pygophore processes slender, directed posteriorly and curving dorsally, apex acute, annulate subapically. Styles with apical process not expanded distally, tapering to acute dorsally hooked apex. Aedeagus simple; shaft directed dorsally, recurved anteriorly; gonopore extending to midlength of shaft; anterior incision extending more basad than gonopore.

REMARKS. This species differs from most in having the vertex flat rather than continuously curved to the face. It is similar to *acrisius* from New Caledonia but has a more strongly curved pygophore process which is annulate subapically and lacks a subapical keel. It is also very similar to *ilia* from the Philippines but differs in having annulations at the apex of the pygophore processes and the apical process of the style of uniform width.

MATERIAL EXAMINED

Holotype ♂, **Australia**: N.S.W., Grenfell, 20.xii.1917 (W.W.F.) (BMNH).Paratypes. **Australia**: 1 ♂, 1 ♀, New South Wales (BMNH).***Batracomorphus palicus* sp. n.**

(Figs 86–89)

Length: ♂, 4.00 mm.

Vertex flat.

Male genitalia. Pygophore processes filamentous, directed posteriorly and curving dorsoposteriorly, apex acute. Styles with apical process strongly expanded over distal half, tapering to acute dorsally hooked apex, a small group of minute 'teeth' on ventral margin near midlength of distal expansion. Aedeagus simple; shaft directed dorsally and curving slightly anteriorly; gonopore extending approximately two-thirds length of shaft; anterior incision slightly shorter than gonopore.

REMARKS. This species differs from most in having the vertex flattened rather than continuously curved to the face. The strongly expanded style in the present species is seen in only one other, *hamadryas* from Fiji. The two may be distinguished from each other, however, by the shape of the pygophore processes and the presence of small teeth on the ventral margin of the style in the present species. The shape of the pygophore processes in *palicus* is similar to that in the Australian *sarpedon* but the present species can be distinguished by its smaller size, the shape of the style and the absence of dark brown spots on the forewings.

MATERIAL EXAMINED

Holotype ♂, **Australia**: Queensland, Wenlock, Batavia River, 152 m, 26–29.vii.1948 (L. J. Brass) (AMNH).***Batracomorphus hamadryas* (Kirkaldy)**

(Figs 90–93)

Eurinoscopus hamadryas Kirkaldy, 1907: 39. Holotype ♂, FIJI (BPBM) [examined].

Length: ♂, 4.40–4.80 mm (mean 4.60 mm).

Forewings with appendix and apical cells sometimes fuscous; face sometimes reddish; whole body rarely reddish or reddish brown.

Male genitalia. Pygophore processes slender, directed posteriorly, slightly sinuate at midlength, apex acute, turned dorsally or sometimes medially. Styles with apical process strongly expanded over distal half, tapering to acute dorsally hooked apex. Aedeagus simple; shaft directed dorsally, turned slightly anteriorly; gonopore extending approximately three-fourths length of shaft; anterior incision equal in length to gonopore.

REMARKS. This species resembles the Australian *palicus* in the shape of the style but lacks minute teeth on the ventral margin of the latter and differs also in the shape of the pygophore process.

DISTRIBUTION. Fiji.

MATERIAL EXAMINED

Eurinoscopus hamadryas Kirkaldy, holotype ♂, Fiji: Rewa, 1906 (Muir) (BPBM).

Fiji: 40 ♂, 35 ♀, Rewa, Suva, Vanua Levu and Viti Levu (BMNH, BPBM, DSIR, USNM).

***Batracomorpha latona* sp. n.**

(Figs 94–98)

Length: ♂, 4.72–5.12 mm (mean 4.92 mm)

Male genitalia. Pygophore processes slender, directed posteriorly, turned abruptly medially just before midlength then curving gradually laterally, apex acute. Styles with apical process only slightly expanded over distal half, tapering to acute dorsally hooked apex. Aedeagus simple; shaft directed dorsally, turning anteriorly distally; gonopore extending to just basad of midlength; anterior incision extending slightly more basad than gonopore.

REMARKS. This species resembles the Australian *sarpedon* and *hecate* in the general appearance of the male genitalia but differs from both in the abrupt change in direction of the pygophore processes. It differs also from *sarpedon* in the absence of dark brown spots on the forewings and from *hecate* in being larger and lacking the subapical annulations on the pygophore processes.

MATERIAL EXAMINED

Holotype ♂, Australia: Queensland, Mt Glorious, 13.ii.1961 (*L. & M. Gressitt*) (BPBM, Type No. 12,527).

Paratypes. Australia: 3 ♂, 1 ♀, New South Wales and Queensland (BMNH, BPBM).

***Batracomorpha manlius* sp. n.**

(Figs 99–102)

Length: ♂, 4.32–4.48 mm (mean 4.40 mm).

Vertex flat.

Male genitalia. Pygophore processes short, slender, directed posteriorly and turned dorsoposteriorly at midlength, apex acute. Styles with apical process only slightly expanded over distal half, tapering to acute dorsally hooked apex. Aedeagus simple; shaft directed dorsally, turned anterodorsally near midlength; gonopore extending to near midlength of shaft; anterior incision equal in length to gonopore.

REMARKS. This species differs from most in having the vertex flat rather than continuously curved to the face. It resembles the widespread *angustatus* but differs in having the pygophore processes turned dorsoposteriorly at midlength and the apical process of the style less expanded over its distal half.

MATERIAL EXAMINED

Holotype ♂, New Hebrides: Espiritu Santo, Apouna River, Camp 2, 146 m, 26–28.viii.1971 (*G. Robinson*) (SAM).

Paratypes. New Hebrides: 1 ♂, 1 ♀, same data as holotype.

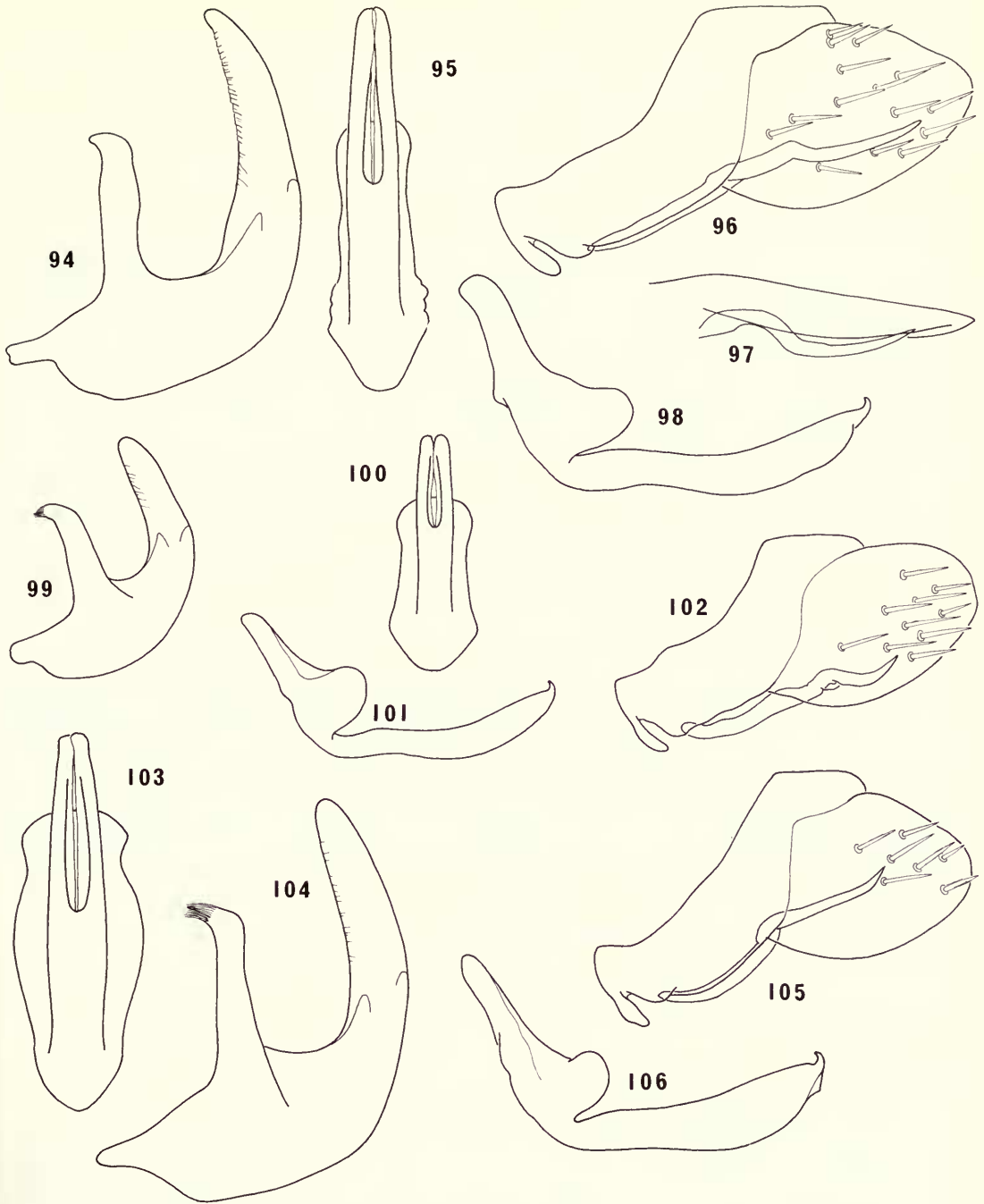
***Batracomorpha tarquin* sp. n.**

(Figs 103–106)

Length: ♂, 4.16–5.36 mm (mean 4.52 mm).

Male genitalia. Pygophore processes slender, relatively short, directed posteriorly or dorsoposteriorly with apex acute and slightly upturned, ventral margin acuminate subapically. Styles with apical process expanded over distal half, tapering to acute dorsally hooked apex, ventral margin acuminate subapically and expanded keel-like or broadly triangular. Aedeagus simple; shaft directed dorsally and turned slightly anterodorsally; gonopore extending approximately two-thirds length of shaft; anterior incision extending slightly more basad than gonopore.

REMARKS. The single specimen from West Malaysia is larger than the Borneo specimens and has the subapical expansion on the style more narrowly triangular. This species is similar to *cocles*



Figs 94–106 94–98, *Batracomorphus latona*. (94, 95) aedeagus; (96) pygophore; (97) left pygophore lobe and process, ventral view; (98) style. 99–102, *B. manlius*. (99, 100) aedeagus; (101) style; (102) pygophore. 103–106, *B. tarquin* (Borneo specimens). (103, 104) aedeagus; (105) pygophore; (106) style. (For further explanation see 'Techniques and methods'.)

from the Philippines and Borneo but has a relatively shorter and more robust pygophore process with the apex more abruptly upturned.

MATERIAL EXAMINED

Holotype ♂, **Borneo**: Sabah, Tawau, Quoin Hill, 3-7.vii.1962 (*H. Holtmann*) (BPBM, Type No. 12,528).

Paratypes. **Borneo**: 38 ♂, Sabah (BPBM). **West Malaysia**: 1 ♂ (BMNH).

***Batracomorphus io* sp. n.**

(Figs 107-110)

Length: ♂, 5.20 mm.

Male genitalia. Pygophore processes slender, straight, directed dorsoposteriorly, slightly expanded subapically, apex acute. Styles with apical process expanded immediately distad of midlength then tapering to acute dorsally hooked apex, a triangular expansion subapically on ventral margin. Aedeagus simple; shaft directed dorsally; gonopore extending approximately two-thirds length of shaft; anterior incision extending slightly more basad than gonopore.

REMARKS. This species is similar to *gressitti* from Australia and *orcus* from West Malaysia and Borneo but is larger and lacks the dark brown spots present on the pronotum and forewings in *orcus*. It also differs in having the pygophore process directed more dorsoposteriorly and in the shape of the apical process of the style.

MATERIAL EXAMINED

Holotype ♂, **Borneo**: Sarawak, Mt Dulit, 1220 m, moss forest, 25.x.1932 (*B. M. Hobby & A. W. Moore*) (BMNH).

***Batracomorphus gressitti* sp. n.**

(Figs 111-114)

Length: ♂, 4.56-4.88 mm (mean 4.68 mm).

Male genitalia. Pygophore processes slender, directed posteriorly, apex acute. Styles with apical process strongly expanded over distal half, abruptly narrowed subapically to bifid apex with a short acute dorsally hooked branch and a much longer ventrally curving branch. Aedeagus simple; shaft directed dorsally; gonopore extending to just basad of midlength; anterior incision equal in length to gonopore.

REMARKS. This species is notable for the development of the apex of the style from the more basic shape. It is similar to *orcus* from Borneo and West Malaysia but has a relatively shorter pygophore process and more robust style as well as lacking dark brown spots on the pronotum and forewings.

MATERIAL EXAMINED

Holotype ♂, **Australia**: Queensland, Mt Glorious, rain forest, 24-28.ii.1961 (*L. & M. Gressitt*) (BPBM, Type No. 12,529).

Paratypes. **Australia**: 6 ♂, 1 ♀, Queensland (BMNH, BPBM).

***Batracomorphus orcus* sp. n.**

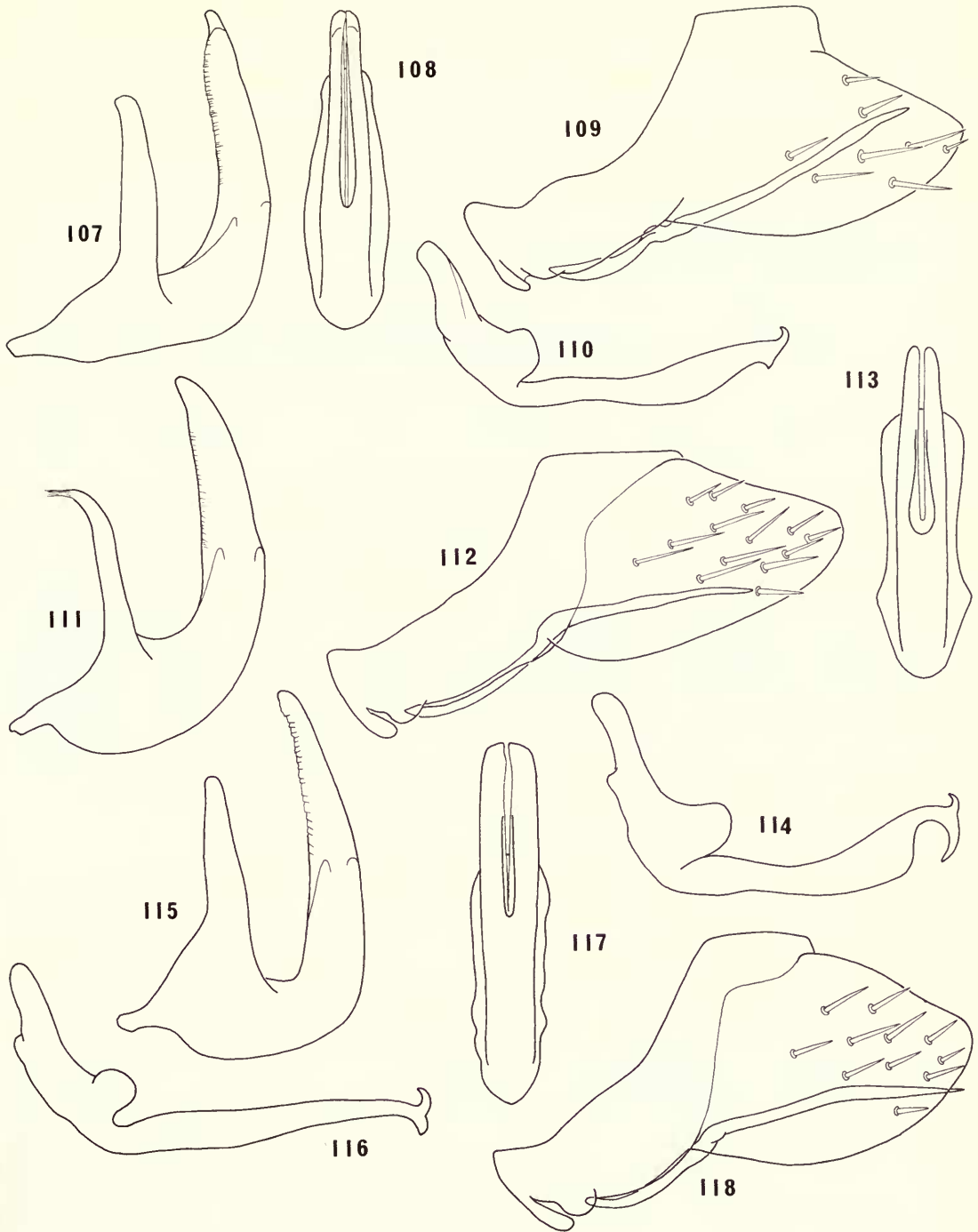
(Figs 115-118)

Length: ♂, 3.92-4.80 mm (mean 4.24 mm).

Pronotum and forewings speckled with uniformly small dark brown tubercles.

Male genitalia. Pygophore processes long, slender, directed posteriorly with distal half turned slightly more ventrad, apex acute, lateral or dorsolateral margin over apical one-third acuminate. Styles with apical process long, slender, tapering gradually to apex, latter bifid with an acute dorsally hooked branch and a ventral triangular branch of approximately equal length. Aedeagus simple; shaft directed dorsally, tapering to apex in lateral aspect; gonopore extending to near midlength of shaft; anterior incision equal in length to gonopore.

REMARKS. This species, like the previous one, is notable for the modified shape of the style from the basic and more common shape. It is similar to *gressitti* from Australia but has a relatively



Figs 107–118 107–110, *Batracomorphus io*. (107, 108) aedeagus; (109) pygophore; (110) style. 111–114, *B. gressitti*. (111) aedeagus; (112) pygophore; (113) aedeagus; (114) style. 115–118, *B. orcus* (Borneo specimens). (115) aedeagus; (116) style; (117) aedeagus; (118) pygophore. (For further explanation see 'Techniques and methods'.)

longer pygophore process and more elongate style as well as dark brown tubercles on the pronotum and forewings.

MATERIAL EXAMINED

Holotype ♂, **Borneo**: Sabah, Tawau, Quoin Hill, 15–20.vii.1962 (*Y. Hirashima*) (BPBM, Type No. 12,530).

Paratypes. **Borneo**: 5 ♂, Sabah and Sarawak (BMNH, BPBM). **West Malaysia**: 2 ♂ (BMNH).

***Batracomorphus hesione* sp. n.**

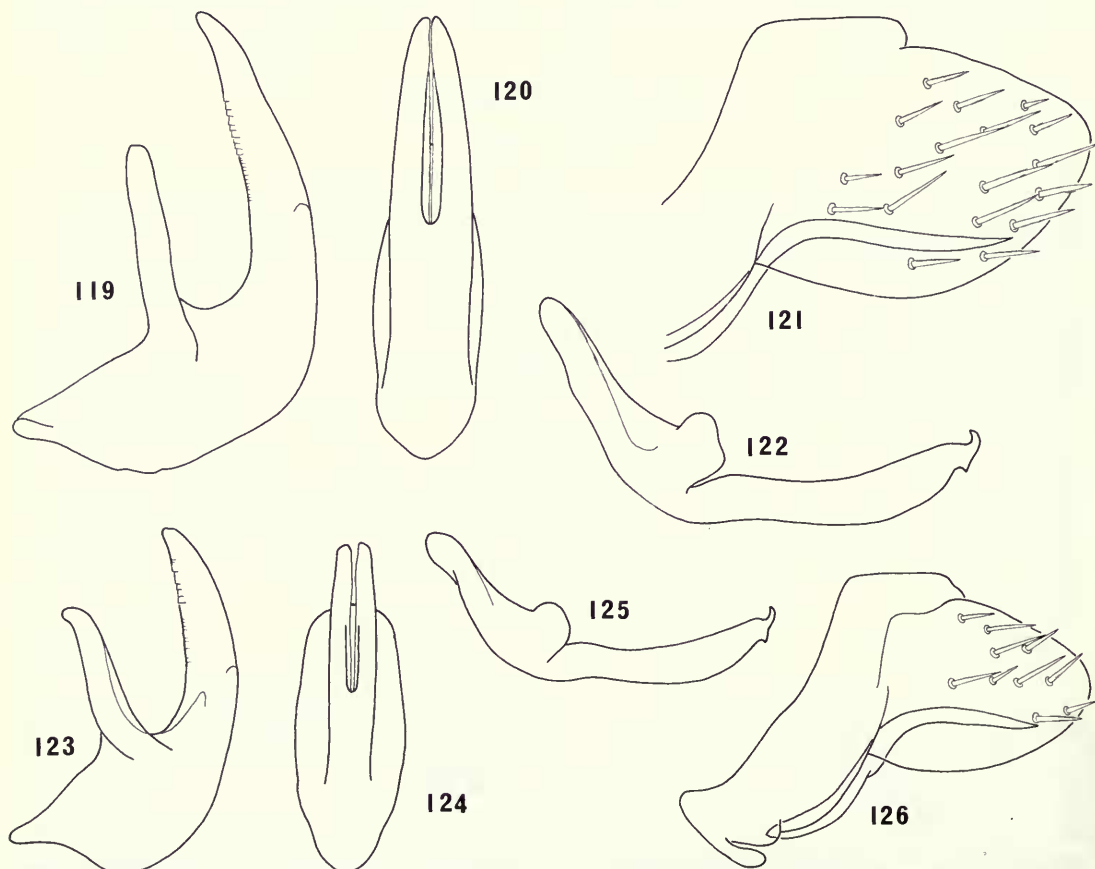
(Figs 119–122)

Length: ♂, 5.44–5.76 mm (mean 5.61 mm).

Colour reddish brown, forewings paler; vertex, pronotum, scutellum and forewings speckled with both large and small dark brown tubercles.

Male genitalia. Pygophore processes slender, directed posteriorly, apex acute. Styles with apical process slightly expanded over distal half, tapering to acute dorsally hooked apex, a small triangular expansion subapically on ventral margin. Aedeagus simple; shaft directed dorsally, turned slightly anterodorsally at midlength, tapering to apex in lateral aspect; gonopore extending to just basad of midlength; anterior incision equal in length to gonopore.

REMARKS. This species is similar to *hecuba* from New Britain but is distinguished by its larger size, the dark brown spots on the dorsum and the more robust and tapered aedeagus. It is known only from the type-locality.



Figs 119–126 119–122, *Batracomorphus hesione*. (119, 120) aedeagus; (121) pygophore; (122) style. 123–126, *B. hecuba*. (123, 124) aedeagus; (125) style; (126) pygophore. (For further explanation see 'Techniques and methods'.)

MATERIAL EXAMINED

Holotype ♂, **Borneo**: Sarawak, Mt Dulit, 1220 m, moss forest, 25.x.1932 (*B. M. Hobby & A. W. Moore*) (BMNH).

Paratypes. **Borneo**: 5 ♂, 10 ♀, Sarawak (BMNH).

Batracomorphus hecuba sp. n.

(Figs 123–126)

Length: ♂, 4.24 mm.

Male genitalia. Pygophore processes slender, directed posteriorly, apex acute. Styles with apical process expanded over distal half, tapering to acute dorsally hooked apex, a small triangular expansion subapically on ventral margin. Aedeagus simple; shaft directed dorsally, curving slightly anterodorsally; gonopore extending to just basad of midlength of shaft; anterior incision extending slightly more basad than gonopore.

REMARKS. This species is similar to *hesione* from Borneo but is smaller, lacks the dark brown spots on the dorsum and has a slightly less robust aedeagus.

MATERIAL EXAMINED

Holotype ♂, **New Britain**: Gazelle Peninsula, Mt Sinewit, 900 m, 5–9.xi.1962 (*J. Sedlacek*) (BPBM, Type No. 12,531).

Batracomorphus ajax sp. n.

(Figs 127–130)

Length: ♂, 4.48 mm.

Male genitalia. Pygophore processes slender, straight, directed posteriorly with distal half turned slightly towards midline, apex acute. Styles with apical process not expanded over distal half, tapering to acute dorsally hooked apex, a small triangular expansion subapically on ventral margin. Aedeagus simple; shaft directed dorsally, curving slightly anterodorsally; gonopore extending to just basad of midlength of shaft; anterior incision longer than gonopore, reaching to near base of shaft.

REMARKS. This species is similar to *hecuba* from New Britain but has a relatively longer pygophore process and more slender style.

MATERIAL EXAMINED

Holotype ♂, **New Hebrides**: Aneityum, Red Crest, 366 m, 4.8 km NE. of Anelgauhat, vi.1955 (*L. E. Cheesman*) (BMNH).

Batracomorphus hebrus sp. n.

(Figs 131–134)

Length: ♂, 4.24 mm.

Vertex flat.

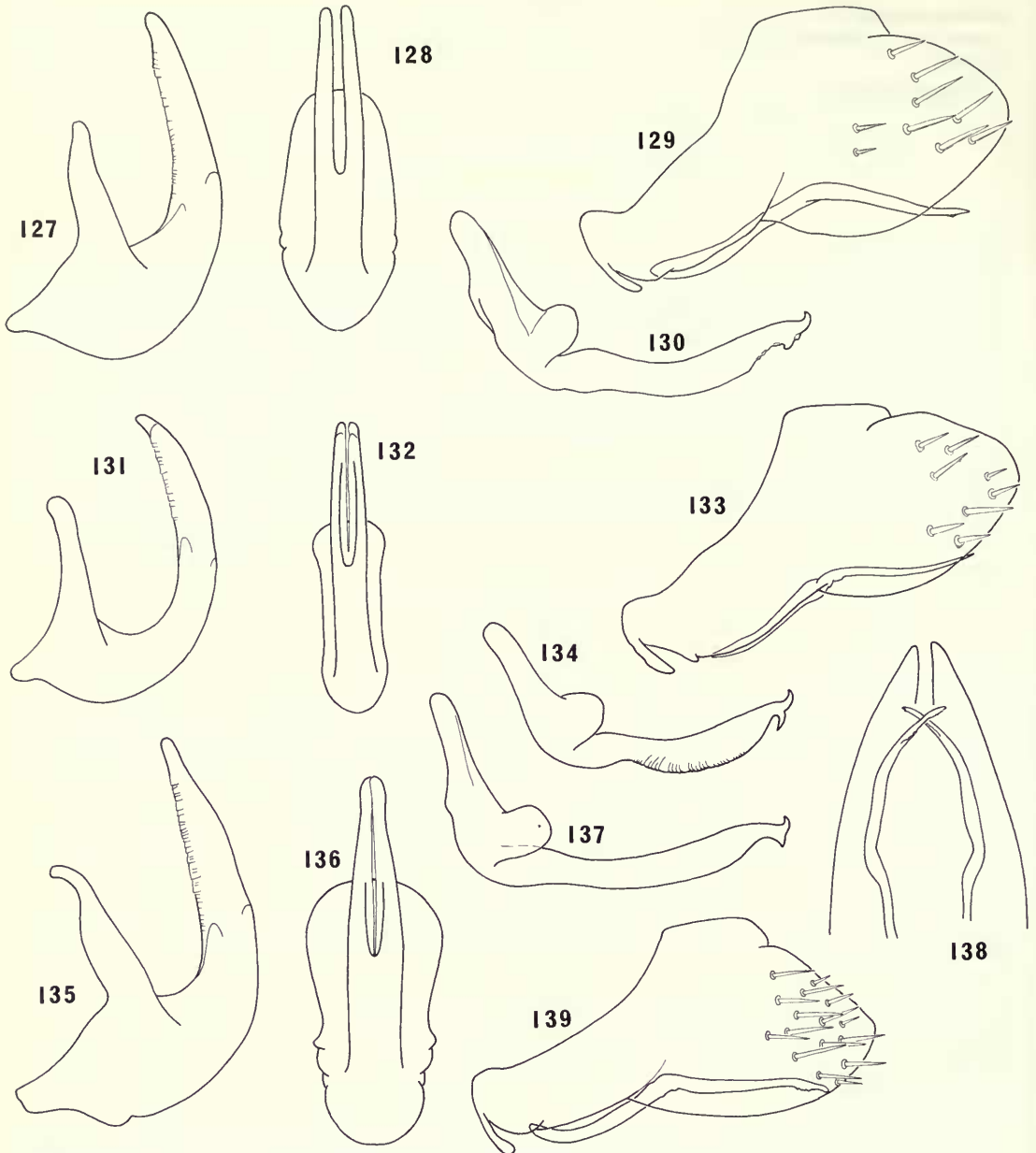
Male genitalia. Pygophore processes simple, slender, directed posteriorly, apex acute. Styles with apical process expanded over distal half, tapering to bifurcate apex with dorsal and ventral branches short, acute, of equal length. Aedeagus simple; shaft directed dorsally, curving anterodorsally; gonopore extending to just basad of midlength of shaft; anterior incision slightly shorter than gonopore.

REMARKS. This species differs from most in having the vertex flattened rather than continuously rounded to the face. It is also notable for the development of the apex of the style from the more basic shape. It is closely related to *ajax* from the New Hebrides but has a more slender pygophore process, a more elongate and markedly curved aedeagus and the apical process of the style expanded and more distinctly bifurcate.

MATERIAL EXAMINED

Holotype ♂, **New Caledonia**: Anse Vata, 1.xi.1958 (*C. R. Joyce*) (BPBM, Type No. 12,532).

Paratypes. **New Caledonia**: 2 ♀, same data as holotype (BPBM).



Figs 127–139 127–130, *Batracomorpha ajax*. (127, 128) aedeagus; (129) pygophore; (130) style. 131–134, *B. hebrus*. (131, 132) aedeagus; (133) pygophore; (134) style. 135–139, *B. laomedon*. (135, 136) aedeagus; (137) style; (138) pygophore lobes and process, ventral view; (139) pygophore. (For further explanation see 'Techniques and methods'.)

***Batracomorpha laomedon* sp. n.**

(Figs 135–139)

Length: ♂, 4.48–4.64 mm (mean 4.58 mm).

Vertex, pronotum, scutellum and forewings speckled with small variably sized dark brown spots.

Male genitalia. Pygophore processes slender, directed posteriorly with apical one-third turned post-romedially, ventral margin acutely ridged subapically and minutely and irregularly serrate. Styles with

apical process elongate, of approximately uniform width through length, tapering to acute dorsally hooked apex, a triangular expansion subapically on ventral margin. Aedeagus simple; shaft directed dorsally, tapering to apex from midlength in lateral aspect; gonopore extending to just basad of midlength of shaft; anterior incision slightly longer than gonopore.

REMARKS. This species is similar to *ajax* from the New Hebrides but differs in the presence of dark brown spots on the dorsum, the subapical serrations on the pygophore processes and the ventrally directed rather than recurved triangular expansion on the style.

MATERIAL EXAMINED

Holotype ♂, **Solomon Islands:** Kolombangara, 1.6 km inland from Kuzi, 9.ix.1965 (BMNH).

Paratypes. **Solomon Islands:** 2 ♂, 1 ♀, Gizo and Kolombangara (BMNH, BPBM).

***Batracomorphus helenus* sp. n.**

(Figs 140–143)

Length: ♂, 5.36 mm.

Male genitalia. Pygophore processes slender, directed posteriorly, turned dorsoposteriorly near apex with latter acute and turned posteriorly. Styles with apical process expanded over distal half, tapering to acute dorsally hooked apex, a triangular expansion subapically on ventral margin. Aedeagus simple; shaft directed dorsally, tapering to apex in lateral aspect; gonopore extending to just basad of midlength of shaft; anterior incision slightly longer than gonopore.

REMARKS. The changes in direction shown by the pygophore processes may only be visible when viewed from other than a lateral aspect due to the rotation of each process on its longitudinal axis. This species is similar to *calliope* from Borneo and *catiline* from Borneo and Sumatra. It differs from *calliope*, however, in size, and in having the subapical expansion of the style relatively larger and the apex of the pygophore process turned more distinctly posteriorly. It differs from *catiline* in having the apical posteriorly directed part of the pygophore process relatively shorter and without an acute ridge on its ventral margin. It is similar also to *cocles* from the Philippines and Borneo but is larger, and has the subapical expansion on the style more pronounced and the apical portion of the pygophore process turned more distinctly posteriorly.

MATERIAL EXAMINED

Holotype ♂, **Borneo:** Sabah, Tawau, Quoin Hill, 3–7.vii.1962 (*H. Holtmann*) (BPBM, Type No. 12,533).

***Batracomorphus calliope* sp. n.**

(Figs 144–147)

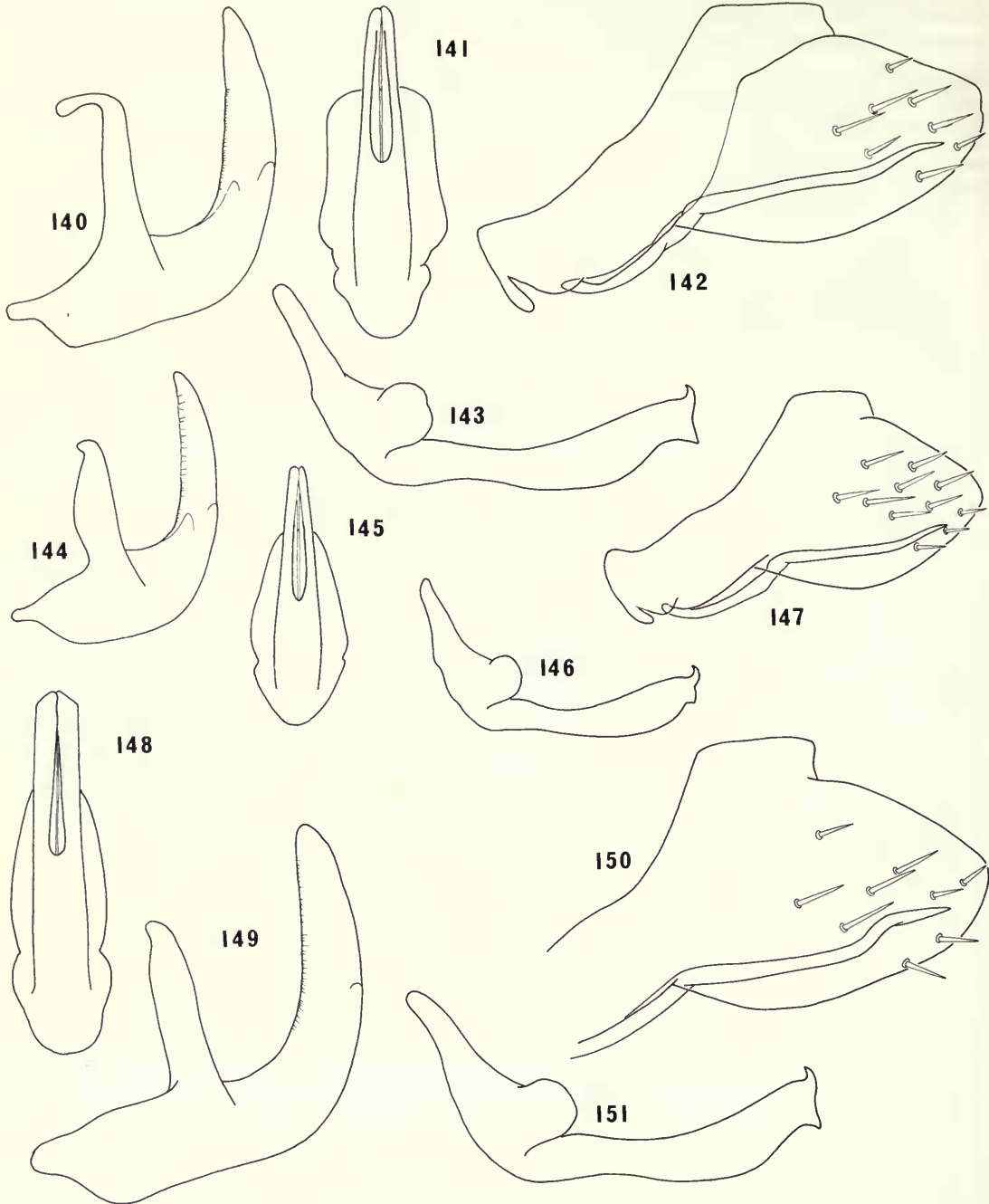
Length: ♂, 3.84 mm.

Male genitalia. Pygophore processes slender, directed posteriorly, apical one-fourth slightly upturned, apex acute. Styles with apical process expanded over distal half, tapering to acute dorsally hooked apex, a small triangular expansion subapically on ventral margin. Aedeagus simple; shaft directed dorsally, tapering to apex in lateral aspect; gonopore extending approximately two-thirds length of shaft; anterior incision slightly longer than gonopore.

REMARKS. This species is similar to *helenus* from Borneo but is much smaller, has the subapical expansion on the style less pronounced and the apex of the pygophore process upturned rather than directed posteriorly. It is also similar to the Borneo and Philippine species *cocles*, but is smaller and has the apex of the pygophore process more distinctly upturned and the shaft of the aedeagus less curved and with the gonopore and anterior incision extending more basad.

MATERIAL EXAMINED

Holotype ♂, **Borneo:** Sarawak, foot of Mt Dulit, junction of rivers Tinjar and Lejok, 2.ix.1932 (*B. M. Hobby & A. W. Moore*) (BMNH).



Figs 140–151 140–143, *Batracomorpha helenus*. (140, 141) aedeagus; (142) pygophore; (143) style. 144–147, *B. calliope*. (144, 145) aedeagus; (146) style; (147) pygophore. 148–151, *B. catiline* (Borneo specimens). (148, 149) aedeagus; (150) pygophore; (151) style. (For further explanation see 'Techniques and methods'.)

***Batracomorpha catiline* sp. n.**

(Figs 148–151)

Length: ♂, 5.20–5.76 mm (mean 5.40 mm).

Male genitalia. Pygophore processes slender, directed posteriorly, turned dorsoposteriorly near apex with latter acute and turned posteriorly, portion distad of sinuation acutely ridged ventrally. Styles with apical process expanded over distal half, tapering to acute dorsally hooked apex, a triangular expansion subapically on ventral margin. Aedeagus simple; shaft directed dorsally; gonopore extending to midlength of shaft; anterior incision equal in length to gonopore.

REMARKS. The pygophore process in this species is sometimes turned on its longitudinal axis so that the view of the process shown in Fig. 150 is visible only from a more dorsal or ventral aspect. This species is similar to *helenus* from Borneo but differs mainly in having the posteriorly directed apical portion of the pygophore process relatively longer and acutely ridged on its ventral margin.

MATERIAL EXAMINED

Holotype ♂, **Borneo**: Sarawak, foot of Mt Dulit, junction of rivers Tinjar and Lejok, 26.ix.1932 (*B. M. Hobby and A. W. Moore*) (BMNH).

Paratypes. **Borneo**: 6 ♂, 2 ♀, Sabah and Sarawak (BMNH, BPBM). **Sumatra**: 1 ♂ (USNM).

***Batracomorpha torquatus* sp. n.**

(Figs 152–155)

Length: ♂, 4.32 mm.

Forewings sparsely speckled with small variably sized dark brown spots.

Male genitalia. Pygophore processes slender, directed posteriorly, turned dorsoposteriorly near apex with latter acute and turned posteriorly, a keel-like extension subapically on ventral margin. Styles with apical process expanded slightly over distal half, abruptly narrowed to acute dorsally hooked apex, a small triangular expansion subapically on ventral margin. Aedeagus simple; shaft directed dorsally, turned slightly anterodorsally from midlength; gonopore extending to just basad of midlength; anterior incision slightly longer than gonopore.

REMARKS. This species is similar to *catiline* from Borneo and Sumatra but, in addition to being smaller and having dark brown spots on the forewings, differs by having the base of the aedeagus directed more dorsally and the subapical extension on the pygophore process more pronounced. It is closely related to *tarchon* from New Guinea but has the apex of the pygophore process directed posteriorly rather than arched ventrally, and the keel-like extension on the ventral margin of the process confined to the extreme apex. They also differ in the shape of the style apex and the presence of dark brown spots on the forewings in the present species.

MATERIAL EXAMINED

Holotype ♂, **Australia**: N. Queensland, Tulley Falls, 10.iii.1956 (*J. L. Gressitt*) (BPBM, Type No. 12,534).

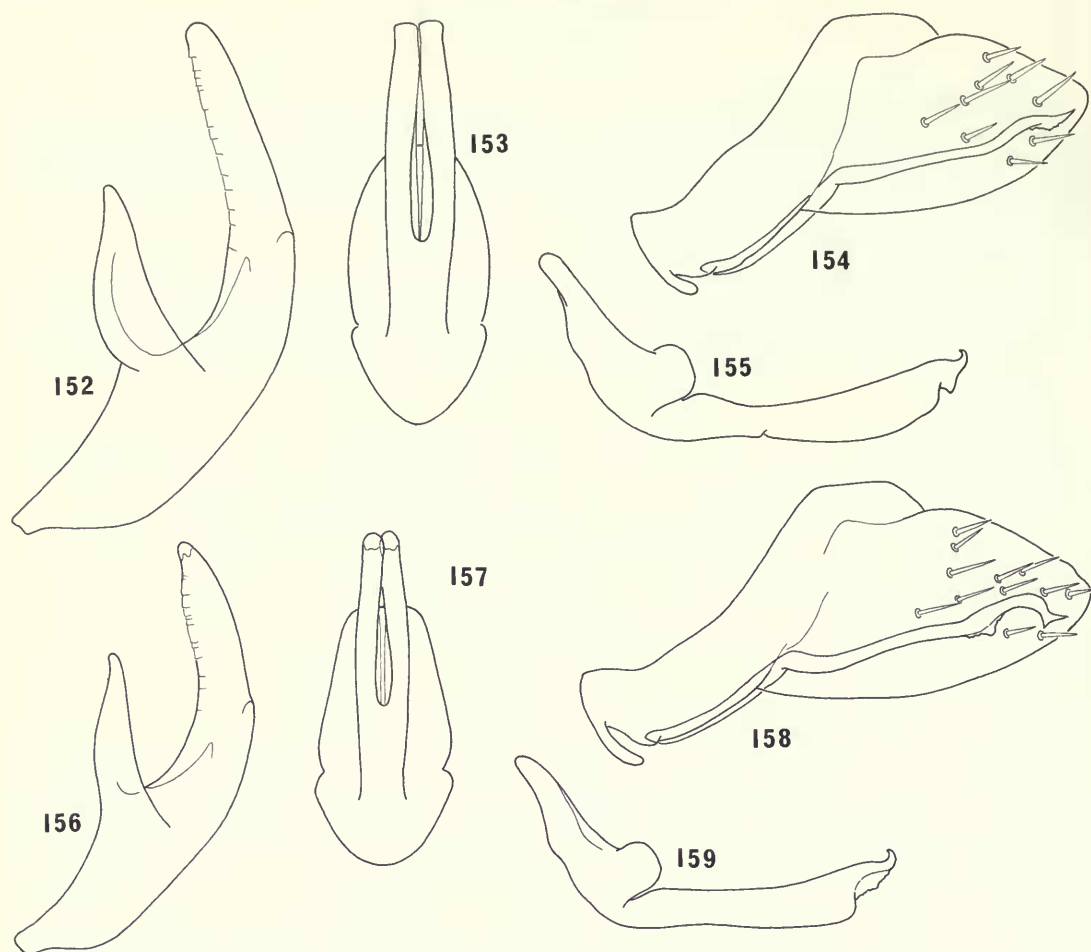
Paratypes. **Australia**: 1 ♂, 1 ♀, same data as holotype (BPBM).

***Batracomorpha tarchon* sp. n.**

(Figs 156–159)

Length: ♂, 4.24 mm.

Male genitalia. Pygophore processes slender, directed posteriorly, distal one-third arched dorsally with apex directed ventrally and weakly bifurcate, a small lamellate expansion on ventral margin at proximal end of arch. Styles with apical process expanded over distal half, abruptly tapered subapically to acute dorsally hooked apex, a lamellate expansion subapically on ventral margin. Aedeagus simple; shaft directed dorsally and turned slightly anterodorsally at midlength; gonopore extending to just basad of midlength; anterior incision slightly longer than gonopore.



Figs 152–159 152–155, *Batracomorpha torquatus*. (152, 153) aedeagus; (154) pygophore; (155) style. 156–159, *B. tarchon*. (156, 157) aedeagus; (158) pygophore; (159) style. (For further explanation see 'Techniques and methods'.)

REMARKS. This species is closely related to the Australian *torquatus* but lacks the dark brown spots on the forewings and has the apex of the pygophore process bifurcate and directed ventrally and the lamellate expansion on the ventral margin extending more basad.

MATERIAL EXAMINED

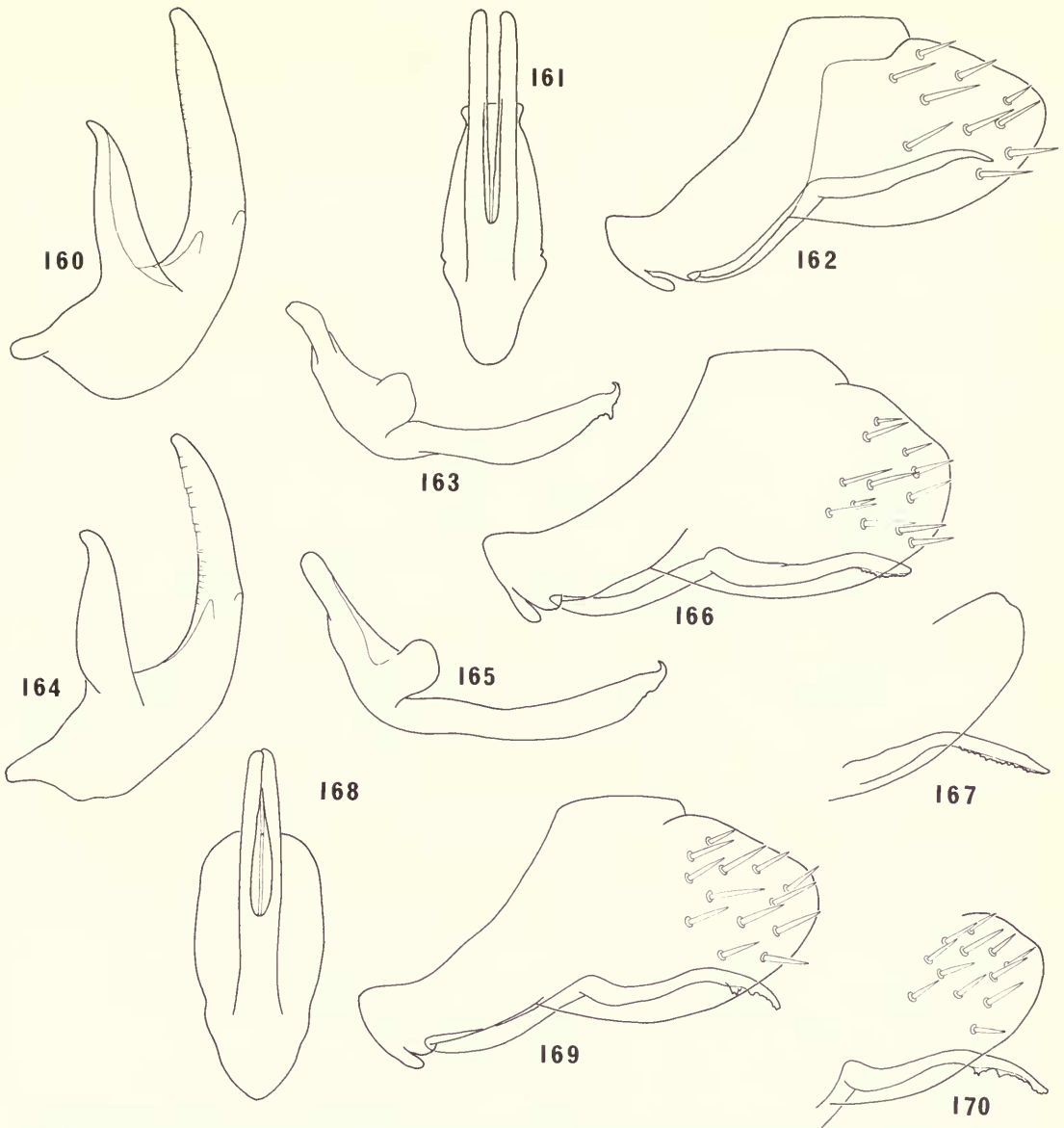
Holotype ♂, **New Guinea**: Irian Jaya, Humboldt Bay District, Bewani Mountains, 400 m, vii.1937 (*W. Stüber*) (BMNH).

***Batracomorpha atreus* sp. n.**

(Figs 160–163)

Length: ♂, 3.68 mm.

Male genitalia. Pygophore processes slender, directed posteriorly and slightly dorsally, apex acute and turned ventroposteriorly. Styles with apical process slightly expanded over distal half, tapering to acute dorsally hooked apex, a small ventrally directed projection subapically on ventral margin. Aedeagus simple; shaft directed dorsally; gonopore extending three-fourths length of shaft; anterior incision extending slightly more basad than gonopore.



Figs 160–170 160–163, *Batracomorphus atreus*. (160, 161) aedeagus; (162) pygophore; (163) style. 164–170, *B. cybele*. (164) aedeagus; (165) style; (166) pygophore (Guadalcanal); (167) same, posterolateral view of process; (168) aedeagus; (169) pygophore (San Jorge); (170) same, posterolateral view of process. (For further explanation see 'Techniques and methods.')

REMARKS. This species resembles *helenus* and *calliope* from Borneo in the apical curvature of the pygophore process but differs from both in the process being relatively more robust, the curvature being more gradual and extending more basad and the apex being turned ventroposteriorly. It is much smaller than *helenus* and differs from both also in having the subapical expansion on the style relatively smaller.

MATERIAL EXAMINED

Holotype ♂, **Australia**: N. Queensland, S. of Ravenshoe, Evelyn Tableland, 350 m, 10.iii.1956 (*J. L. Gressitt*) (BPBM, Type No. 12,535).

***Batracomorphus cybele* sp. n.**

(Figs 164–170)

Length: ♂, 4.16–4.56 mm (mean 4.35 mm).

Forewings speckled with small, variably sized, dark brown spots, rarely absent with inner edge from apex of scutellum to appendix dark brown.

Male genitalia. Pygophore processes slender, directed posteriorly, distal half turned posteromesally with its ventral margin acutely ridged and mildly serrate, distal half rarely turned posteroventrally with lateral margin acutely ridged and serrate, apex acute. Styles with apical process of uniform width, not or only slightly expanded over distal half, tapering to acute dorsally hooked apex; small lamellate expansion, irregular or triangular in shape, sometimes present subapically on ventral margin. Aedeagus simple; shaft directed dorsally, curving slightly anterodorsally from midlength; gonopore extending to just basad of midlength; anterior incision approximately same length as gonopore.

REMARKS. The absence of dark brown spots on the forewings has been noted only in specimens from San Cristoval where they occur together with normal spotted individuals. No differences in the male genitalia have been detected between the two forms. Variation in the orientation of the distal half of the pygophore process appears to be due to the rotation of the whole structure along its longitudinal axis, the abnormal condition, when present, occurring in the same population as the other. This species is similar to *laomedon*, also from the Solomon Islands, but differs in having the distal half of the aedeagus relatively more slender and recurved, the apical process of the style more robust subapically and with subapical expansion less well developed and with the pygophore processes more robust and ventral serrations more extensive. The two species also differ externally, *cybele* having the dark brown spots restricted to the forewings.

MATERIAL EXAMINED

Holotype ♂, **Solomon Islands**: Guadalcanal, Kukum, 26.i.1963 (*P. Greenslade*) (BMNH).

Paratypes. **Solomon Islands**: 84 ♂, 71 ♀, Bougainville, Buka, Choiseul, Fauro, Guadalcanal, Kolombangara, Malaita, New Georgia, Nggela, San Cristoval, San Jorge, Santa Ysabel and Small Nggela (BMNH, BPBM, USNM).

***Batracomorphus circe* sp. n.**

(Figs 171–175)

Length: ♂, 4.80 mm.

Male genitalia. Pygophore processes slender, directed posteriorly, distal half curving ventroposteriorly with apical one-fourth turned abruptly posterolaterally, apex tapered and acute in lateral aspect, plate-like and expanded foot-like in ventral aspect. Styles with apical process elongate, of uniform width, slightly sinuate at midlength, terminating in a short acute dorsally hooked process and a slightly longer ventrally directed process. Aedeagus simple; shaft directed dorsally and slightly recurved anteriorly; gonopore extending approximately two-thirds length of shaft; anterior incision extending slightly more basad than gonopore.

REMARKS. The style in this species is modified from the normal condition and resembles that of *bacchusi*, also from New Guinea. The two species are also similar in the shape of the pygophore process although they differ in that that of *circe* is turned posterolaterally near the apex with the latter expanded in ventral aspect. The present species also lacks the dark brown spots present on the forewings of *bacchusi*. The shape and orientation of the pygophore processes in *circe* resemble those of *memnon* from New Guinea but the two differ in the shape of the styles.

MATERIAL EXAMINED

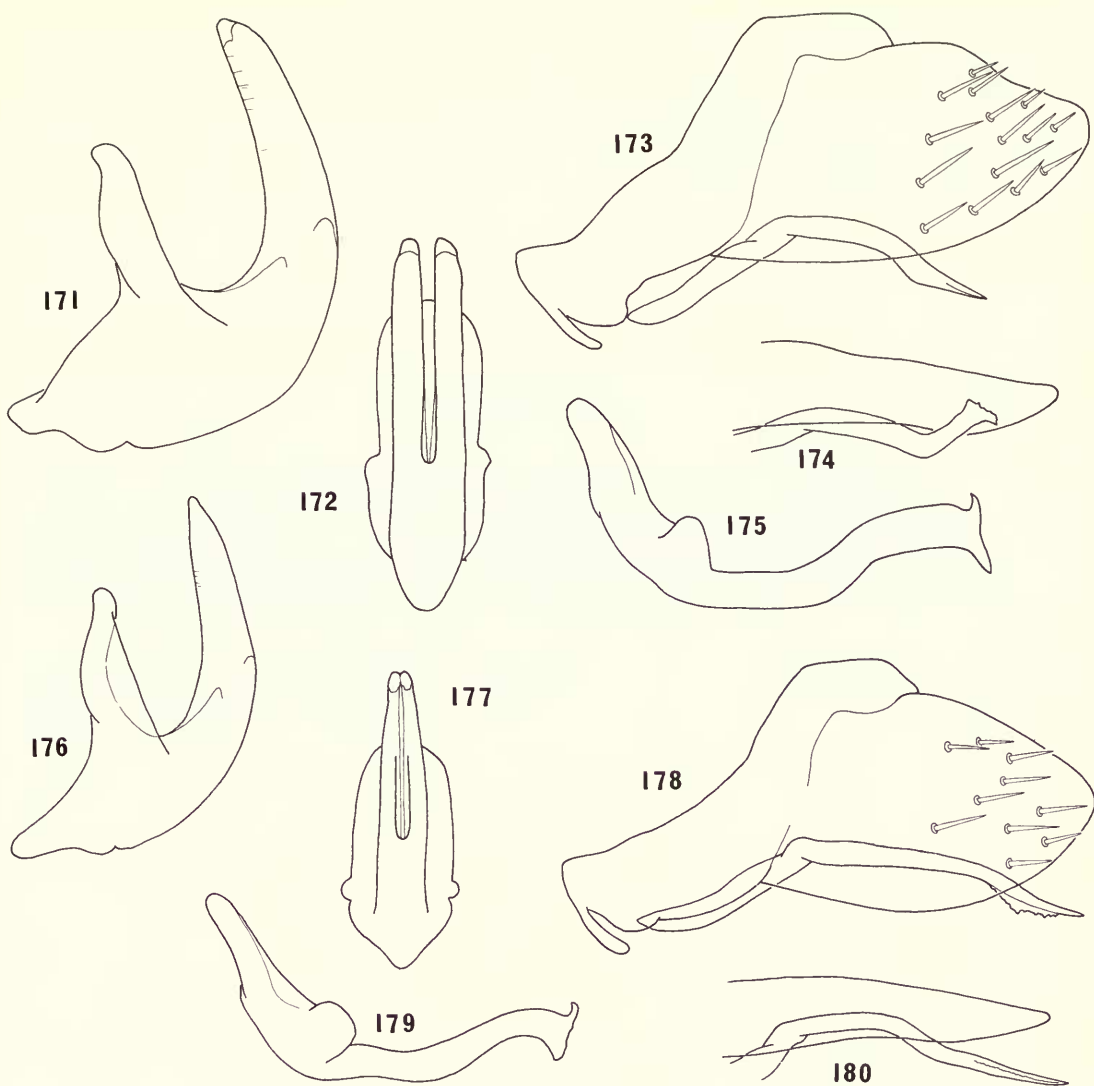
Holotype ♂, **New Guinea**: Papua New Guinea, Madang District, Finisterre Mountains, Budemu, 1220 m, 15–24.x.1964 (*M. E. Bacchus*) (BMNH).

***Batracomorphus bacchusi* sp. n.**

(Figs 176–180)

Length: ♂, 4.48–4.64 mm (mean 4.51 mm).

Forewings paler than body and speckled with small dark brown spots.



Figs 171–180 171–175, *Batracomorphis circe*. (171, 172) aedeagus; (173) pygophore; (174) left pygophore lobe and process, ventral view; (175) style. 176–180, *B. bacchusi*. (176, 177) aedeagus; (178) pygophore; (179) style; (180) left pygophore lobe and process, ventral view. (For further explanation see 'Techniques and methods'.)

Male genitalia. Pygophore processes slender, directed posteriorly and turned slightly ventrally and mesally from midlength, apex acute, ventral margin acutely ridged and mildly serrate over apical third. Styles with apical process elongate, of uniform width, slightly sinuate from midlength, terminating in a short, acute, dorsally hooked process and a ventrally directed triangular expansion. Aedeagus simple; shaft directed dorsally; gonopore extending to just basad of midlength of shaft; anterior incision extending slightly more basad than gonopore.

REMARKS. The subapical serrations on the ventral margin of the pygophore process is a character that is found in species from the Solomon Islands (*cybele*), Borneo (*sibyl* and *ilus*) and West Malaysia (*tithonus*) as well as elsewhere in New Guinea (*ares*). Apart from differences between all these species in the relative length and orientation of the pygophore processes, *bacchusi* differs from them all in the shape of the style. They also all (except *cybele*) lack the dark brown spots on the forewings. The shape of the style in *bacchusi* is similar to that in *circe* from New

Guinea, the differences between the two having been described under that species. The present species is known only from the Finisterre Mountains of New Guinea.

MATERIAL EXAMINED

Holotype ♂, **New Guinea**: Papua New Guinea, Madang District, Finisterre Mountains, Moro, 1692 m, 30.x-15.xi.1964 (*M. E. Bacchus*) (BMNH).

Paratypes. **New Guinea**: 13 ♂, Papua New Guinea (BMNH).

***Batracomorphus anubis* sp. n.**

(Figs 181-187)

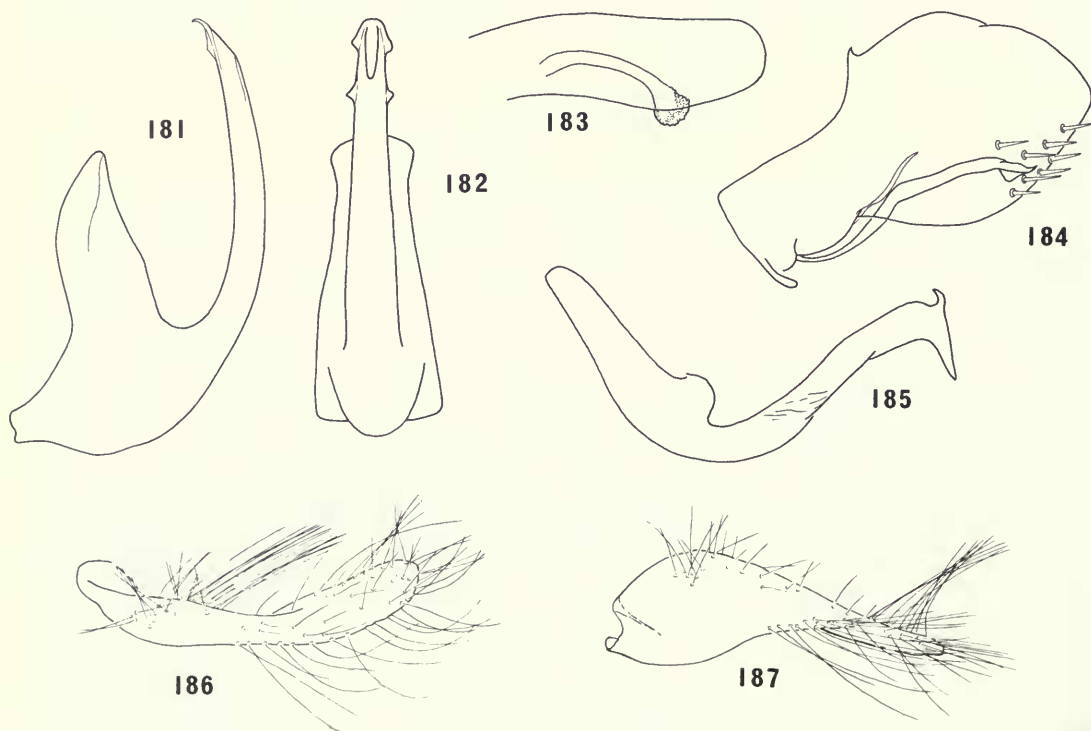
Length: ♂, 5.12 mm.

Colour reddish brown.

Vertex flat.

Male genitalia. Pygophore processes slender, directed posteriorly, apex turned medially and expanded plate-like with margin mildly serrate. Subgenital plates with basal stem absent; a uniseriate row of long hair-like setae along distal half of ventral margin and distal third of dorsal margin; a group of long hair-like setae near base of dorsal surface; lateral surface with short randomly scattered setae; medial surface devoid of setae. Styles with apical process slender, directed dorsoposteriorly, of uniform width in lateral aspect with lateral expansion at midlength in dorsal aspect, terminating in a short acute dorsally hooked process and a larger ventrally directed triangular process. Aedeagus simple; shaft slender, directed dorsally, slightly recurved anteriorly at apex, expanded slightly apically and also subapically as small lateral triangular projections; gonopore small, apical on posterior margin; anterior incision absent.

REMARKS. In addition to the flattened vertex, this species shows important differences from most in the shape of the subgenital plates, aedeagus and styles. The absence of a basal stem on the plates appears to be due to the basal extension of the lateral lobe, the remnants of the stem being



Figs 181-187 *Batracomorphus anubis*. 181, 182, aedeagus; 183, left pygophore lobe and process, ventral view; 184, pygophore; 185, style; 186, left subgenital plate, lateral view; 187, same, ventral view. (For further explanation see 'Techniques and methods'.)

visible within the existing plate. This development has been accompanied by the loss of setae on the medial surface. The shape of the style resembles that of *circe* and is clearly a modification of the normal condition, as are the subgenital plates. The aedeagus differs from normal in the absence of an anterior incision and the very short gonopore. The genitalia in general distinguish *anubis* from all others in the genus and its true affinities, especially as regards the aedeagus, are uncertain. The shape of the pygophore process suggests a possible relationship to those in which the apex is variously expanded, and the style resembles that in *circe* and *bacchusi* although this shape of style does occur in several other species.

MATERIAL EXAMINED

Holotype ♂, New Guinea: Irian Jaya, Cyclops Mountains, Sabron, 366 m, 15.v.1936 (*L. E. Cheesman*) (BMNH).

Batracomorphus chryseis sp. n.

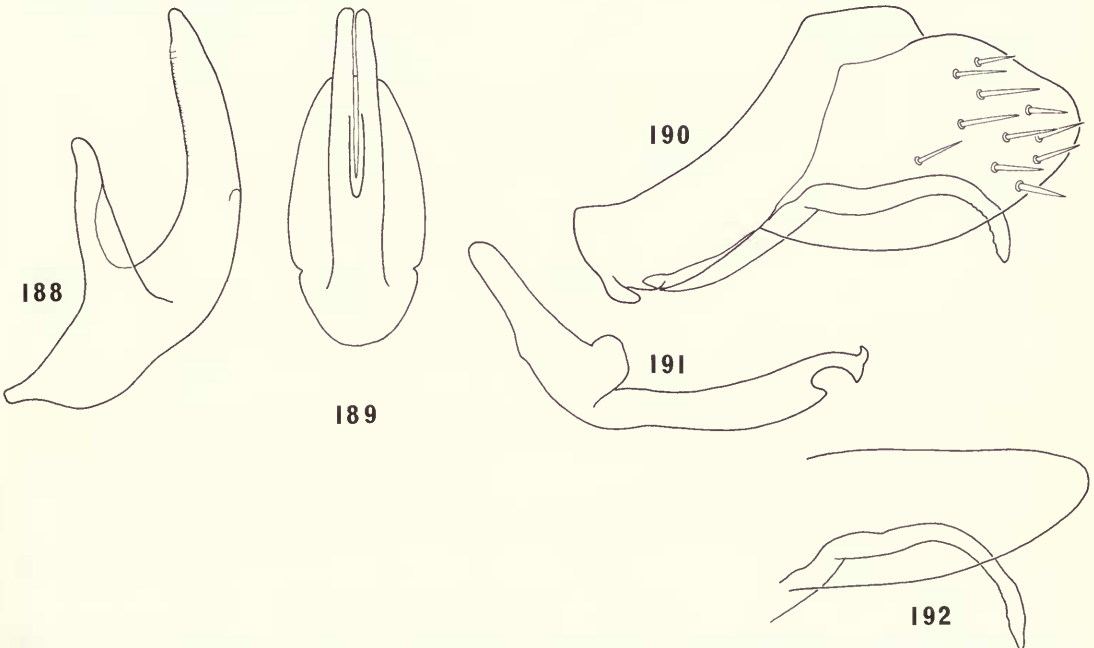
(Figs 188–192)

Length: ♂, 4.72–5.04 mm (mean 4.88mm).

Pronotum, scutellum and forewings speckled with small variably sized dark brown spots.

Male genitalia. Pygophore processes slender, directed posteriorly, turned mesally at midlength and curved ventrally with apex acute, ventral margin keeled subapically and slightly serrate. Styles with apical process expanded slightly over distal portion, abruptly narrowed near apex with ventral margin extending posteriorly as acute lobe; narrow subapical portion terminating in a small acute dorsally hooked process and a ventrally directed triangular expansion. Aedeagus simple; shaft directed dorsally; gonopore extending to just basad of midlength of shaft; anterior incision approximately equal in length to gonopore.

REMARKS. This species shows a slight resemblance to *cybele* from the Solomon Islands in the shape of the pygophore process but differs in having the process turned ventrally over its posterior half. It also differs from *cybele* in the shape of the style as well as having dark brown spots on the pronotum and scutellum as well as the forewings. The shape of the style is unusual in that the ventral margin is extended posteriorly to produce a distinctly concave subapical margin.



Figs 188–192 *Batracomorphus chryseis*. 188, 189, aedeagus; 190, pygophore; 191, style; 192, left pygophore lobe and process, ventrolateral view. (For further explanation see 'Techniques and methods'.)

MATERIAL EXAMINED

Holotype ♂, New Britain: Sio, N. coast, 600 m, 24.vii. 1956 (*E. J. Ford Jr*) (BPBM, Type No. 12,536).
Paratypes. New Britain: 1 ♂, 1 ♀ (BPBM).

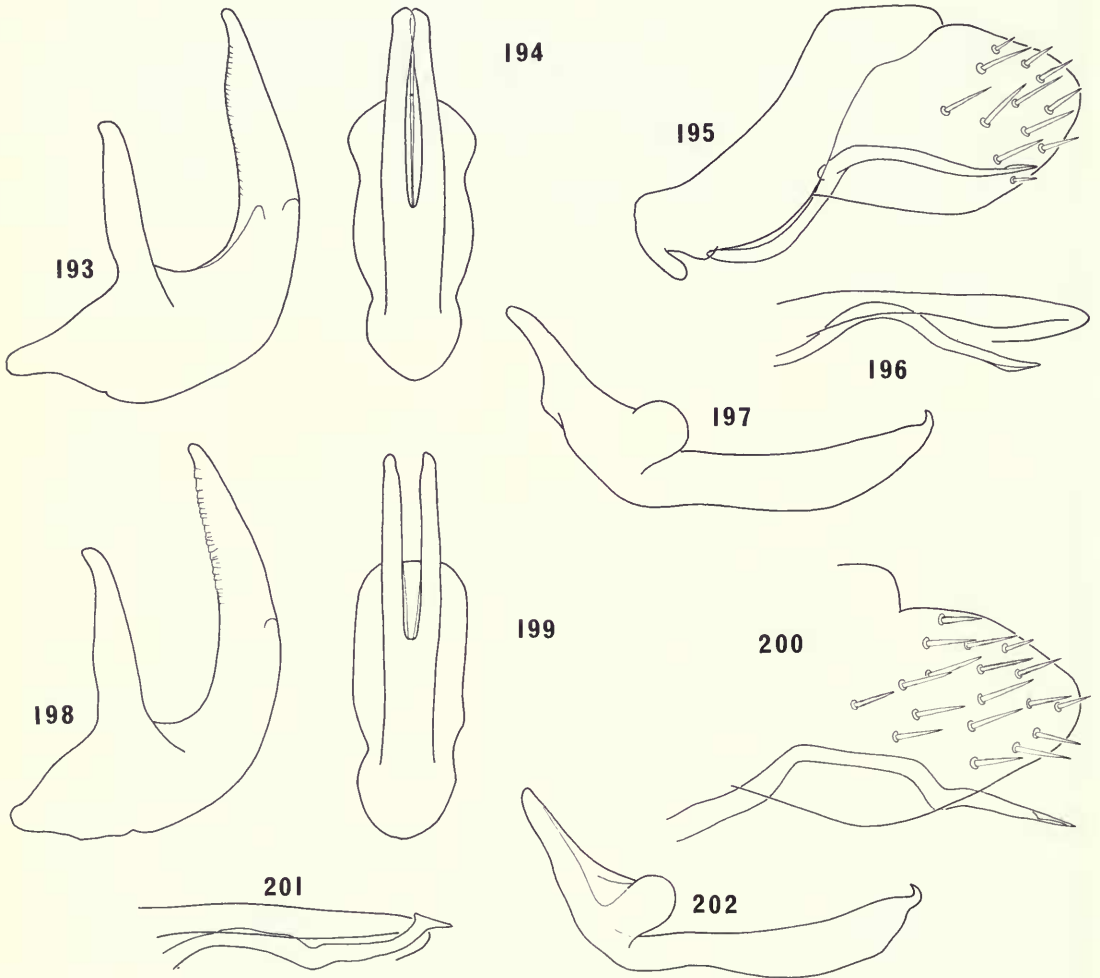
Batracomorpha torrevillasi sp. n.

(Figs 193–197)

Length: ♂, 4.40–4.72 mm (mean 4.53 mm).

Male genitalia. Pygophore processes slender, directed posteriorly, apex acute, a small lamellate expansion subapically on medial margin. Styles with apical process slightly expanded over distal half, tapering to short acute dorsally hooked apex. Aedeagus simple; shaft directed dorsally, tapering to apex in lateral aspect; gonopore extending approximately two-thirds length of shaft; anterior incision equal in length to gonopore.

REMARKS. This species is similar to *priam* from the Philippines but is smaller, lacks the dark brown spots on the pronotum and forewings, and with the pygophore process relatively shorter, less sinuate, and with the subapical expansion medial rather than ventral.



Figs 193–202 193–197. *Batracomorpha torrevillasi*. (193, 194) aedeagus; (195) pygophore; (196) left pygophore lobe and process, ventral view; (197) style. 198–202, *B. memnon*. (198, 199) aedeagus; (200) pygophore lobe and process; (201) same, ventral view; (202) style. (For further explanation see 'Techniques and methods'.)

MATERIAL EXAMINED

Holotype ♂, **Philippines**: Mindanao, Misamis OOr., Mt Balatukan, 15 km SW. of Gingoog, 1000–2000 m, 5.ii.1960 (*H. M. Torrevillas*) (BPBM, Type No. 12,537).

Paratypes. **Philippines**: 3 ♂, Luzon and Mindanao (BPBM).

***Batracomorphus memnon* sp. n.**

(Figs 198–202)

Length: ♂, 4.72–5.04 mm (mean 4.88 mm).

Male genitalia. Pygophore processes slender, directed posteriorly, sinuate at midlength and turned laterally near apex, latter acute and turned posteriorly with a small acute lamellate expansion subapically on lateral margin. Styles with apical process expanded over distal half, tapering to small acute dorsally hooked apex. Aedeagus simple; shaft directed dorsally, tapering to apex in lateral aspect; gonopore extending to just basad of midlength of shaft; anterior incision approximately equal in length to gonopore.

REMARKS. This species is similar to *priam* from the Philippines but lacks the dark brown spots on the pronotum and forewings and has the pygophore processes more sinuate, turned laterally near apex and with the subapical expansion on the lateral rather than the ventral margin. It is known only from the Finisterre Mountains of New Guinea.

MATERIAL EXAMINED

Holotype ♂, **New Guinea**: Papua New Guinea, Madang District, Finisterre Mountains, Damanti, 1082 m, 2–11.x.1964 (*M. E. Bacchus*) (BMNH).

Paratypes. **New Guinea**: 5 ♂, Papua New Guinea (BMNH).

***Batracomorphus cloelia* sp. n.**

(Figs 203–207)

Length: ♂, 4.56–5.20 mm (mean 4.89 mm).

Forewings sometimes speckled with very small dark brown spots.

Male genitalia. Pygophore processes slender, directed posteriorly, slightly sinuate, apex acute, with inner convolution visible subapically, rarely indistinct. Styles with apical process expanded over distal half, tapering to short acute dorsally hooked apex. Aedeagus simple; shaft directed dorsally, tapering to apex in lateral aspect; gonopore extending approximately three-fourths length of shaft; anterior incision equal in length to gonopore.

REMARKS. This species is similar to *priam* from the Philippines but lacks the dark brown spots on the pronotum and usually also on the forewings. They differ also in the apex of the pygophore process, which in the present species is convoluted internally and lacks a subapical keel-like expansion, and in the degree of expansion of the apical process of the style. It is also similar to *tydeus* from the Solomon Islands but the latter species has a more slender aedeagus and the pygophore process more regularly sinuate and without inner convolutions subapically.

MATERIAL EXAMINED

Holotype ♂, **Philippines**: Luzon, Benguet Subprovince, Baguio (*Baker*) (USNM).

Paratypes. **Philippines**: 18 ♂, 16 ♀, Luzon (BPBM, USNM).

***Batracomorphus priam* sp. n.**

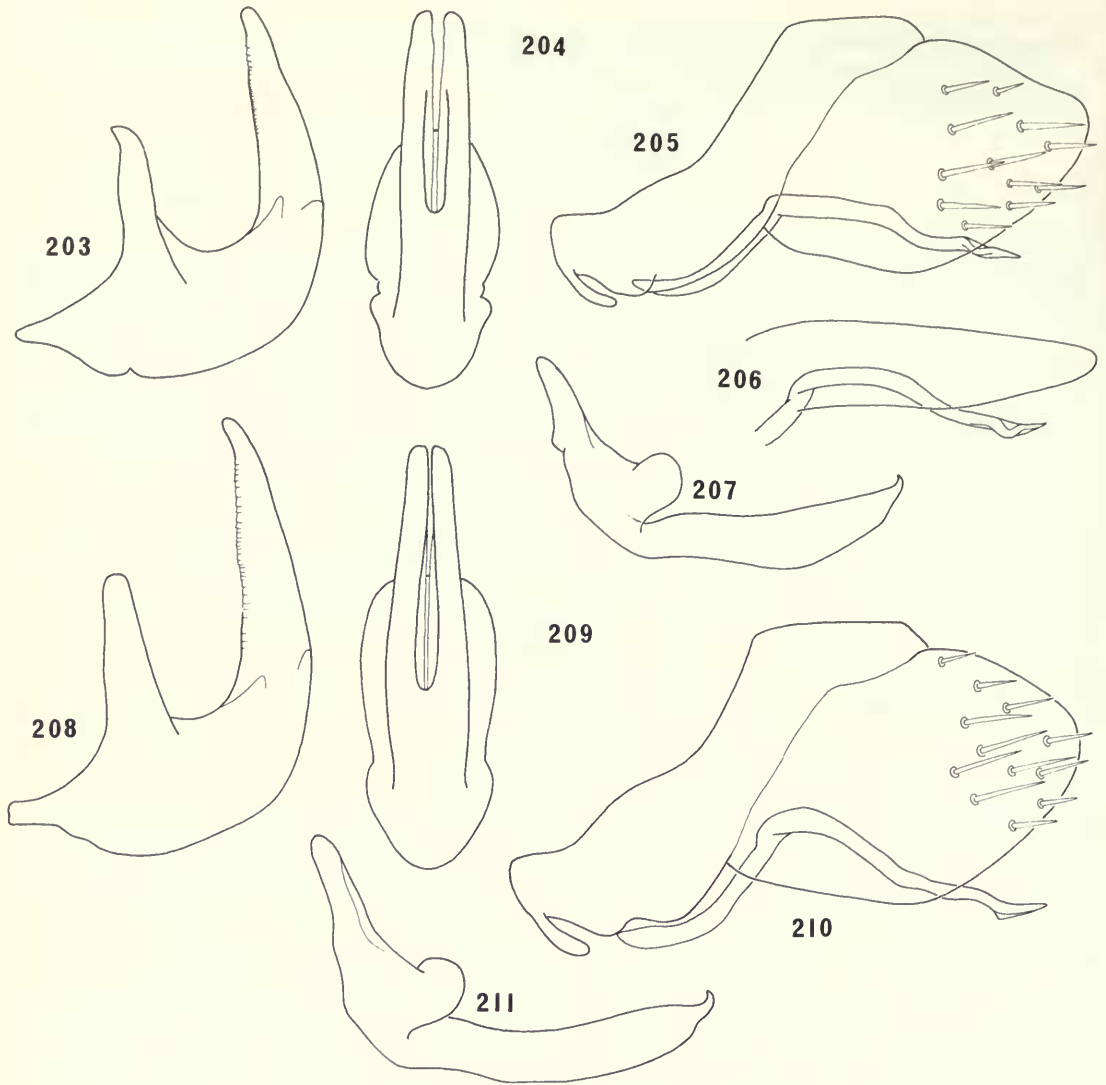
(Figs 208–211)

Length: ♂, 5.28 mm.

Pronotum and forewings speckled with very small dark brown spots.

Male genitalia. Pygophore processes slender, directed posteriorly and slightly ventrally, slightly sinuate, apex acute, ventral margin acutely ridged subapically. Styles with apical process not expanded over distal half, tapering to short acute dorsally hooked apex. Aedeagus simple; shaft directed dorsally, tapering to apex in lateral aspect; gonopore extending approximately three-fourths length of shaft; anterior incision extending slightly more basad than gonopore.

REMARKS. This species is similar to *cloelia* from the Philippines but has a distinct keel-like



Figs 203–211 203–207, *Batracomorpha cloelia*. (203, 204) aedeagus; (205) pygophore; (206) left pygophore lobe and process, ventral view; (207) style. 208–211, *B. priam*. (208, 209) aedeagus; (210) pygophore; (211) style. (For further explanation see 'Techniques and methods'.)

expansion near the apex of the ventral margin of the pygophore process which also lacks the internal convolutions of the other species. They also differ in the shape of the apical process of the style which in *cloelia* is expanded over the distal half. The present species also resembles *tydeus* from the Solomon Islands but is much larger, has dark brown spots on the pronotum and forewings, the apical process of the style of uniform width, and the pygophore process less regularly sinuate and the ventral margin distinctly ridged subapically.

MATERIAL EXAMINED

Holotype ♂, **Philippines**: Mindanao, Davao Province, E. slope of Mt Apo, Baclayan, 2348 m, xi.1946 (*H. Hoogstraal*) (FMNH).

Paratype. **Philippines**: 1 ♀, same data as holotype (FMNH).

***Batracomorphus icarus* sp. n.**

(Figs 212–216)

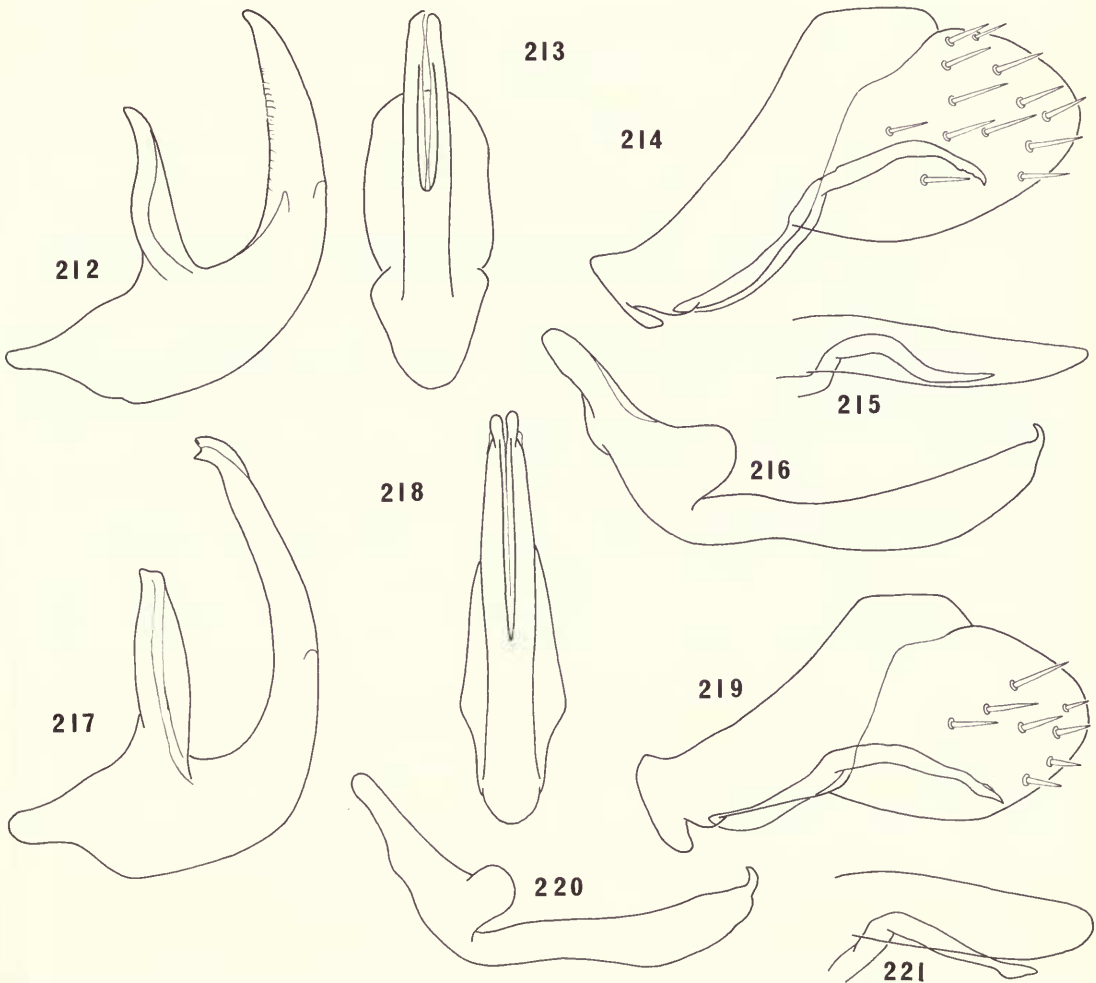
Length: ♂, 4.64 mm.

Male genitalia. Pygophore processes slender, directed dorsoposteriorly with distal half turned ventro-posteriorly, apex acute, ventrolateral margin acuminate subapically. Styles with apical process expanded over distal half, tapering to short, acute dorsally hooked apex. Aedeagus simple; shaft directed dorsally, recurved anteriorly at apex; gonopore extending to slightly basad of midlength of shaft; anterior incision slightly longer than gonopore.

REMARKS. This species is similar to *proteus* from New Guinea but differs in having the aedeagus more robust basally, the pygophore process relatively shorter, the acuminate distal portion of the ventral margin less extensive and the apex directed posteriorly rather than posteromesally.

MATERIAL EXAMINED

Holotype ♂, Australia: N. Queensland, Kuranda, 13.iii.1956 (*J. L. Gressitt*) (BPBM, Type No. 12,538).



Figs 212–221 212–216, *Batracomorphus icarus*. (212, 213) aedeagus; (214) pygophore; (215) left pygophore lobe and process, ventral view; (216) style. 217–221, *B. camillus*. (217, 218) aedeagus (Sulawesi); (219) pygophore (Palawan); (220) style (Sulawesi); (221) left pygophore lobe and process (Palawan), ventrolateral view. (For further explanation see 'Techniques and methods'.)

***Batracomorphus camillus* sp. n.**

(Figs 217–221)

Length: ♂, 3.92–4.64 mm (mean 4.24 mm).

Male genitalia. Pygophore processes slender, directed posteriorly and curving ventroposteriorly, apex acutely spatulate. Styles with apical process expanded over distal half, tapering to short, acute dorsally hooked apex. Aedeagus simple; shaft slender, directed dorsally, distal half curving anterodorsally with apex recurved anteriorly, a pair of very small thin triangular expansions on anterior margin at apex and a pair of slightly larger lobe-like expansions on posterior margin at apex; gonopore extending approximately two-thirds length of shaft; anterior incision extending to midlength of shaft or slightly less.

REMARKS. This species is similar to *icarus* from Australia but differs in the aedeagus being more slender with apical expansions and the pygophore process being spatulate at the apex. It is also similar to *torrevillasi* from the Philippines in the shape of the pygophore process but differs from this species also in the shape of the aedeagus.

MATERIAL EXAMINED

Holotype ♂, **Sulawesi**: Minahassa, Tomohon, 30.vii.1954 (*A. H. G. Alston*) (BMNH).

Paratypes. **Philippines**: 7 ♂, 2 ♀, Luzon, Mindanao, Palawan and Tawi Tawi (BPBM, ZM).

***Batracomorphus curvatus* Linnavuori**

(Figs 222–227)

Batrachomorphus curvatus Linnavuori, 1960a: 242. Holotype ♂, PALAU ISLANDS (FMNH) [examined].

Length: ♂, 4.40–5.12 mm (mean 4.68 mm).

Colour of vertex, pronotum and scutellum chestnut-brown, sometimes stramineous, scutellum usually darker than vertex and pronotum; face stramineous or yellowish brown; forewings translucent, whitish or pale stramineous, apex and narrow transverse band at midlength chestnut-brown, faintly so in males and more conspicuous in females.

Male genitalia. Pygophore processes slender, directed dorsally at base and curving ventroposteriorly, apex acute, medial margin acutely ridged subapically and sometimes expanded keel-like. Styles with apical process slender, elongate, slightly expanded over distal half, tapering to dorsally directed finger-like apex with slight constriction subapically. Aedeagus simple, expanded ventrally at base; shaft directed dorsally, recurved anteriorly over distal half; gonopore extending to approximately midlength of shaft; anterior incision extending approximately one-third length of shaft.

REMARKS. This species differs from other known Pacific species in the shape of the aedeagus and style and resembles the Indian species *indicus*. Both show affinities with the African species in the shape of the aedeagus and styles. The single specimen from Borneo has the pygophore processes more strongly arched with the apex directed ventrally. The styles are also less constricted subapically with the finger-like apex relatively shorter and the subapical prominence on the ventral margin acute. It is possible that this is a new species.

DISTRIBUTION. Borneo*, Java*, Palau, Philippines* (* new records).

MATERIAL EXAMINED

Batrachomorphus curvatus Linnavuori, holotype ♂, **Palau Islands**: Peleliu Island, 1.viii.1945 (*H. S. Dybas*) (FMNH).

Borneo: 1 ♂, Sabah (BPBM). **Java**: 1 ♂ (ITZ). **Palau Islands**: 2 ♂, 2 ♀, Babelthup and Koror Palau (USNM). **Philippines**: 20 ♂, 10 ♀, Leyte, Luzon, Mindanao, Negros and Panay (AMNH, BPBM, FMNH, USNM).

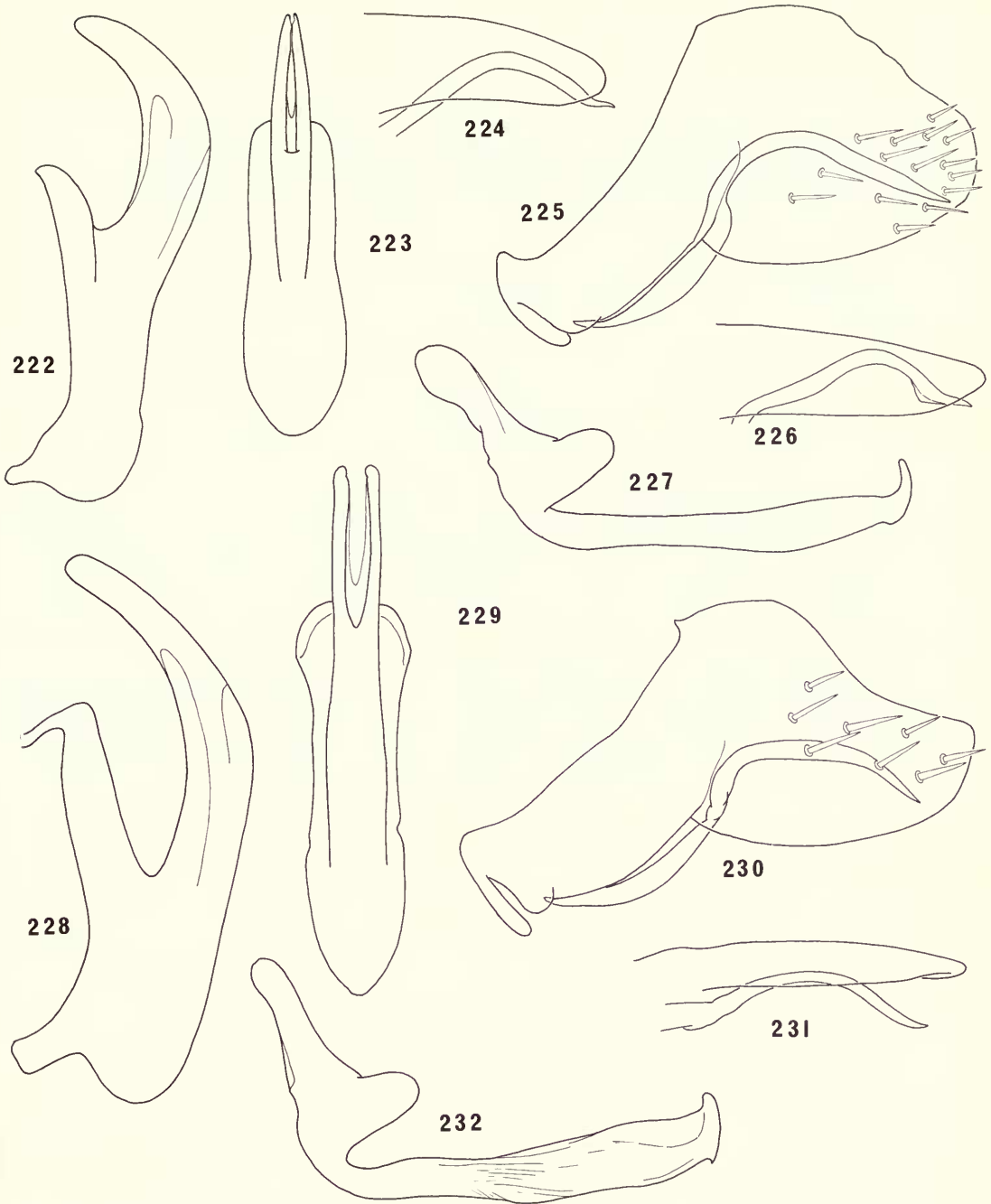
***Batracomorphus indicus* (Lethierry)**

(Figs 228–232)

Macropsis indica Lethierry, 1892: 209. Holotype ♂, INDIA (MNHN) [examined].

Length: ♂, 4.08 mm.

Male genitalia. Pygophore with lateral lobe narrowing to apex, processes slender, elongate, directed posteriorly and curving ventromesally, apex acute. Styles with apical process laterally compressed,



Figs 222–232 222–227, *Batracomorphus curvatus*. (222, 223) aedeagus; (224) left pygophore lobe and process (Philippines), ventrolateral view; (225) pygophore; (226) left pygophore lobe and process (Palau), ventrolateral view; (227) style. 228–232, *B. indicus* (holotype). (228, 229) aedeagus; (230) pygophore; (231) left pygophore lobe and process, ventral view; (232) style. (For further explanation see 'Techniques and methods'.)

blade-like, increasing in width towards apex in lateral aspect, terminating in short, dorsally directed, finger-like process with a small spur-like projection subapically on ventral margin. Aedeagus simple, expanded ventrally at base; shaft elongate, directed dorsally and recurved anteriorly at midlength; gonopore extending to near midlength of shaft; anterior incision extending approximately one-third length of shaft.

REMARKS. This species has been widely recorded from India to Flores, although its presence in the Pacific area was not confirmed by the present study. It is closely related to *curvatus* but differs mainly in the shape of the style and aedeagus as well as in coloration. The shape of the style is unknown amongst the Pacific species and is similar to that present in the African species to which both *indicus* and *curvatus* show affinities.

DISTRIBUTION. Burma, Sri Lanka, China, Flores, India, Krakatau, Lombok, Seychelles, Sumbawa.

MATERIAL EXAMINED

Macropsis indica Lethierry, holotype ♂, India: Mahé (MNHN).

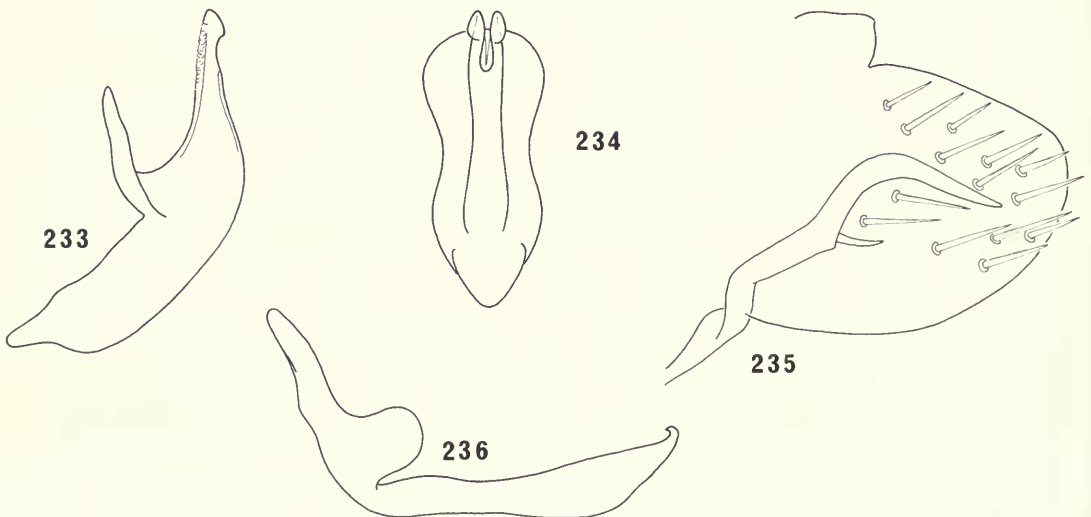
***Batracomorpha daedalus* sp. n.**

(Figs 233–236)

Length: ♂, 4.88 mm.

Male genitalia. Pygophore processes elongate, directed dorsoposteriorly over basal one-third then abruptly arched dorsally, apex directed ventroposteriorly, acute, a short posteriorly directed spine-like projection on ventral margin at proximal end of arched portion. Styles with apical process expanded over distal half, tapering to short acute dorsally hooked apex. Aedeagus simple, robust; shaft short, directed dorsally, tapering to apex in lateral aspect and terminating in a pair of small laterally directed lobes; gonopore extending approximately one-fourth length of shaft; anterior incision equal in length to gonopore.

REMARKS. Although lamellate and lobe-like expansions of the aedeagus are present in several species, the robust nature of the aedeagus in the present species, the relative length of the gonopore and anterior incision, and the orientation of the apical lobes are all unique. It shows certain similarities to *caeneus* from West Malaysia and Borneo but differs in having a more robust aedeagus, a strongly arched pygophore process and a strongly expanded apical process on the style.



Figs 233–236 *Batracomorpha daedalus*. 233, 234, aedeagus; 235, pygophore lobe and process; 236, style. (For further explanation see 'Techniques and methods'.)

MATERIAL EXAMINED

Holotype ♂, **Sulawesi**: Sopotan Masif, near Kelelond, 14–19.vi.1954 (*A. H. G. Alston*) (BMNH).

Batracomorphus tydeus sp. n.

(Figs 237–240)

Length: ♂, 4.00–4.16 mm (mean 4.08 mm).

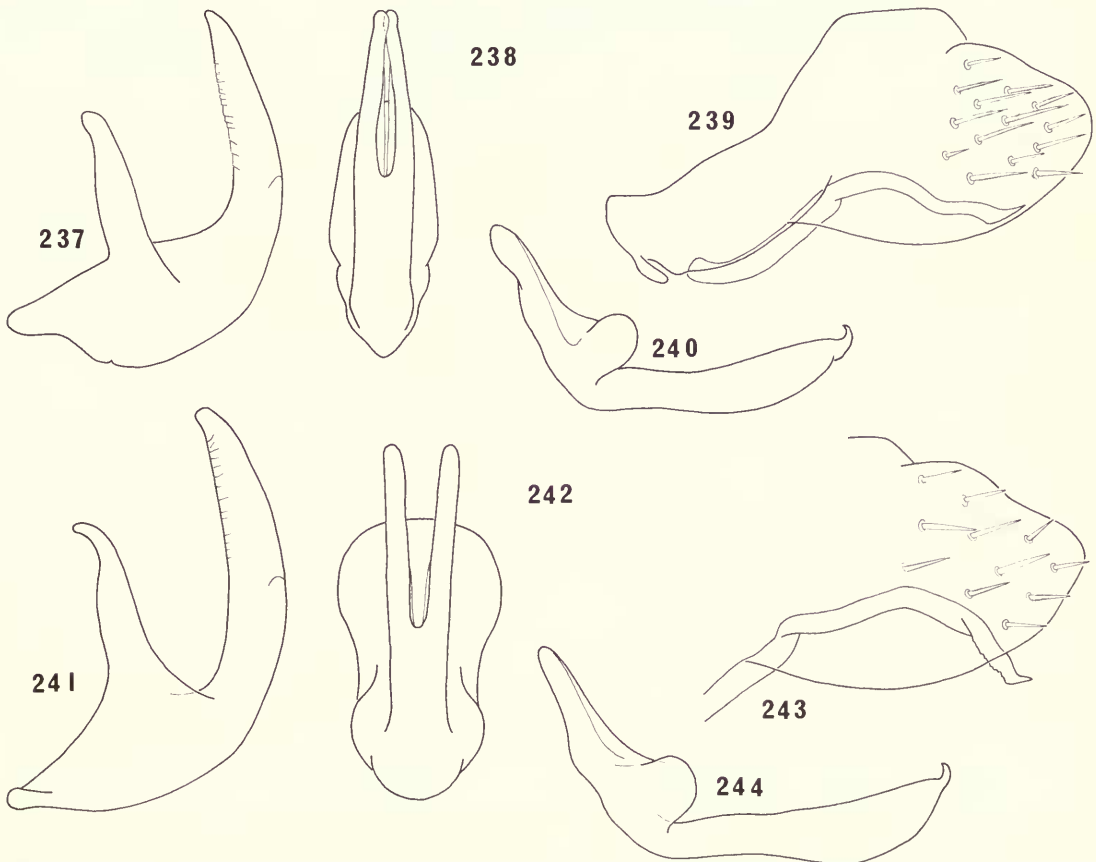
Male genitalia. Pygophore processes slender, slightly sinuate, directed posteriorly and slightly ventrally, apex acute. Styles with apical process expanded over distal half, tapering to short acute dorsally hooked apex. Aedeagus simple; shaft directed dorsally; gonopore extending to just basad of midlength of shaft; anterior incision approximately same length as gonopore.

REMARKS. This species is similar to the Philippine *cloelia* and *priam* but is smaller than either and lacks the dark brown spots present on the pronotum and forewings of *priam*, and sometimes present on the forewings of *cloelia*. It also differs in having the pygophore process relatively shorter and more regularly sinuate and lacking the internal convolutions of *cloelia* and the subapical ventral ridge of *priam*.

MATERIAL EXAMINED

Holotype ♂, **Solomon Islands**: Guadalcanal, Honiara, 4–8.x.1953 (*J. D. Bradley*) (BMNH).

Paratypes. **Solomon Islands**: 5 ♂, 2 ♀, Santa Ysabel (BPBM).



Figs 237–244 237–240, *Batracomorphus tydeus*. (237, 238) aedeagus; (239) pygophore; (240) style. 241–244, *B. proteus*. (241, 242) aedeagus; (243) pygophore lobe and process; (244) style. (For further explanation see 'Techniques and methods'.)

***Batracomorphus proteus* sp. n.**

(Figs 241–244)

Length: ♂, 4.96 mm.

Male genitalia. Pygophore processes slender, directed posteriorly, curving ventrally from midlength, sinuate in ventral aspect with apex directed posteromesally, ventral margin acuminate over distal one-fourth, apex acute. Styles with apical process expanded over distal half, tapering to short acute dorsally hooked apex. Aedeagus simple; shaft directed dorsally; gonopore extending to midlength of shaft; anterior incision equal in length to gonopore.

REMARKS. This species is similar to *icarus* from Australia but differs in having the pygophore processes relatively longer, the acuminate distal portion of the ventral margin more extensive and the apex directed posteromesally rather than posteriorly.

MATERIAL EXAMINED

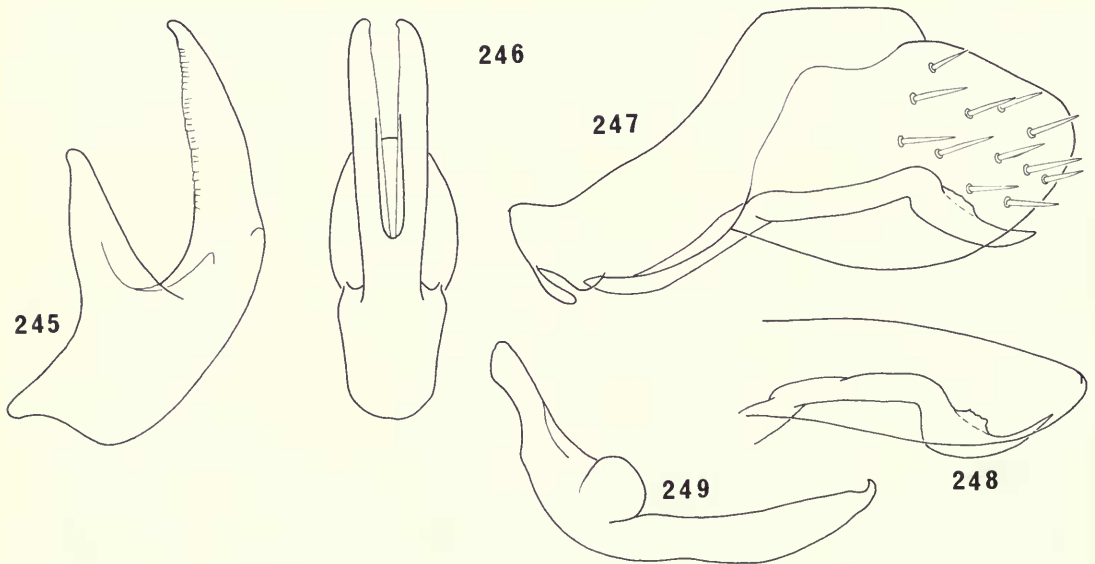
Holotype ♂, New Guinea: Papua New Guinea, Madang District, Finisterre Mountains, Damanti, 1082 m, 2–11.x.1964 (*M. E. Bacchus*) (BMNH).

***Batracomorphus ganymede* sp. n.**

(Figs 245–249)

Length: ♂, 4.64–4.80 mm (mean 4.72 mm).

Male genitalia. Pygophore processes elongate, directed posteriorly over basal half, turned abruptly mesally at midlength and expanded into robust claw-like distal half tapering to acute laterally curving apex, upper concave margin of claw sometimes with small lamellate expansion basally. Styles with apical process slightly expanded over distal half, tapering to short acute dorsally hooked apex. Aedeagus simple; shaft directed dorsally, tapering in lateral aspect to anteriorly recurved apex; gonopore extending approximately two-thirds length of shaft; anterior incision extending slightly more basad than gonopore.



Figs 245–249 *Batracomorphus ganymede*. 245, 246, aedeagus; 247, pygophore; 248, left pygophore lobe and process, ventrolateral view; 249, style. (For further explanation see 'Techniques and methods'.)

REMARKS. This species is similar to *latona* from Australia but has a more robust pygophore process with its distal half expanded claw-like. It is known only from the Finisterre Mountains of New Guinea.

MATERIAL EXAMINED

Holotype ♂, **New Guinea**: Papua New Guinea, Madang District, Finisterre Mountains, Moro, 1692 m, 30.x-15.xi.1964 (*M. E. Bacchus*) (BMNH).

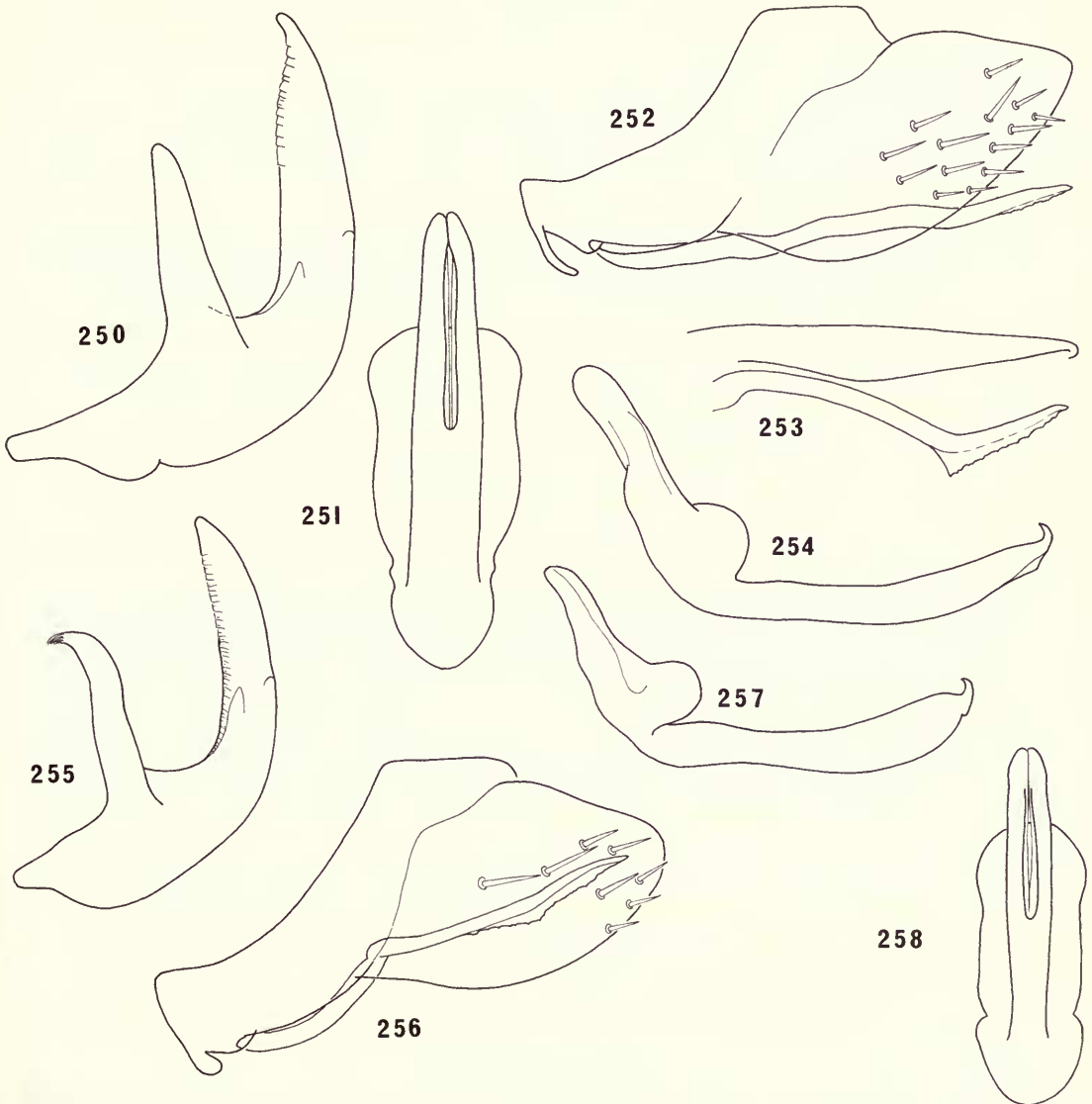
Paratype. **New Guinea**: 1 ♂, Papua New Guinea (BMNH).

Batracomorphus ares sp. n.

(Figs 250-254)

Length: ♂, 5.44 mm.

Male genitalia. Pygophore processes slender, directed posteromesally over basal two-thirds then turned abruptly posteriorly, distal one-third with mesal margin acutely ridged and weakly serrate, apex acute. Styles with apical process not expanded over distal half, tapering to short acute dorsally hooked apex, ventral margin acutely ridged subapically. Aedeagus simple; shaft directed dorsally, tapering in lateral



Figs 250-258 250-254, *Batracomorphus ares*. (250, 251) aedeagus; (252) pygophore; (253) left pygophore lobe and process, ventral view; (254) style. 255-258, *B. ilus*. (255) aedeagus; (256) pygophore; (257) style; (258) aedeagus. (For further explanation see 'Techniques and methods'.)

aspect to anteriorly recurved apex; gonopore extending approximately two-thirds length of shaft; anterior incision extending slightly more basad than gonopore.

REMARKS. This species is similar to *ilus* from Borneo but is larger, has the aedeagus more robust with the shaft more tapered apically, the pygophore processes angled along their length rather than straight with the acuminate margin less extensive, and the apical process of the style of uniform width in lateral aspect. Both species are related to *procris* and *elissa* from Malaya and New Guinea respectively.

MATERIAL EXAMINED

Holotype ♂, **New Guinea**: Papua New Guinea, Morobe District, Edie Creek, 2135 m, 17.ix.1964 (*M. E. Bacchus*) (BMNH).

***Batracomorphus ilus* sp. n.**

(Figs 255–258)

Length: ♂, 4.32–4.56 mm (mean 4.41 mm).

Male genitalia. Pygophore processes slender, straight, directed dorsoposteriorly, apex acute, ventral margin over distal half keeled and slightly serrate. Styles with apical process expanded over distal half, tapering to short acute dorsally hooked apex, a small subapical prominence on ventral margin. Aedeagus simple; shaft directed dorsally; gonopore extending to just basad of midlength of shaft; anterior incision very slightly longer than gonopore.

REMARKS. This species is similar to *ares* from New Guinea but is smaller with the pygophore processes relatively shorter, straight rather than angled and with the acuminate ventral margin extending more basad. The aedeagus of the present species is also less robust and the apical process of the style expanded over its distal half. It is known only from the type-locality.

MATERIAL EXAMINED

Holotype ♂, **Borneo**: Sabah, Tawau, Quoin Hill, 3–7.vii.1962 (*H. Holtmann*) (BPBM, Type No. 12,539).

Paratypes. **Borneo**: 3 ♂, Sabah (BPBM).

***Batracomorphus procris* sp. n.**

(Figs 259–262)

Length: ♂, 5.04 mm.

Male genitalia. Pygophore processes slender, directed posteriorly, expanded slightly distad of midlength and tapering to acute apex, dorsal or dorsolateral margin over apical one-fourth acuminate and slightly serrate. Styles with apical process expanded over distal half, tapering to short acute dorsally hooked apex, with small lamellate expansion subapically on ventral margin. Aedeagus simple; shaft directed dorsally; gonopore extending to just basad of midlength of shaft; anterior incision approximately equal in length to gonopore.

REMARKS. This species is similar to *ilus* from Borneo but is larger and has the pygophore processes less extensively acuminate subapically and on the dorsal rather than the ventral margin.

MATERIAL EXAMINED

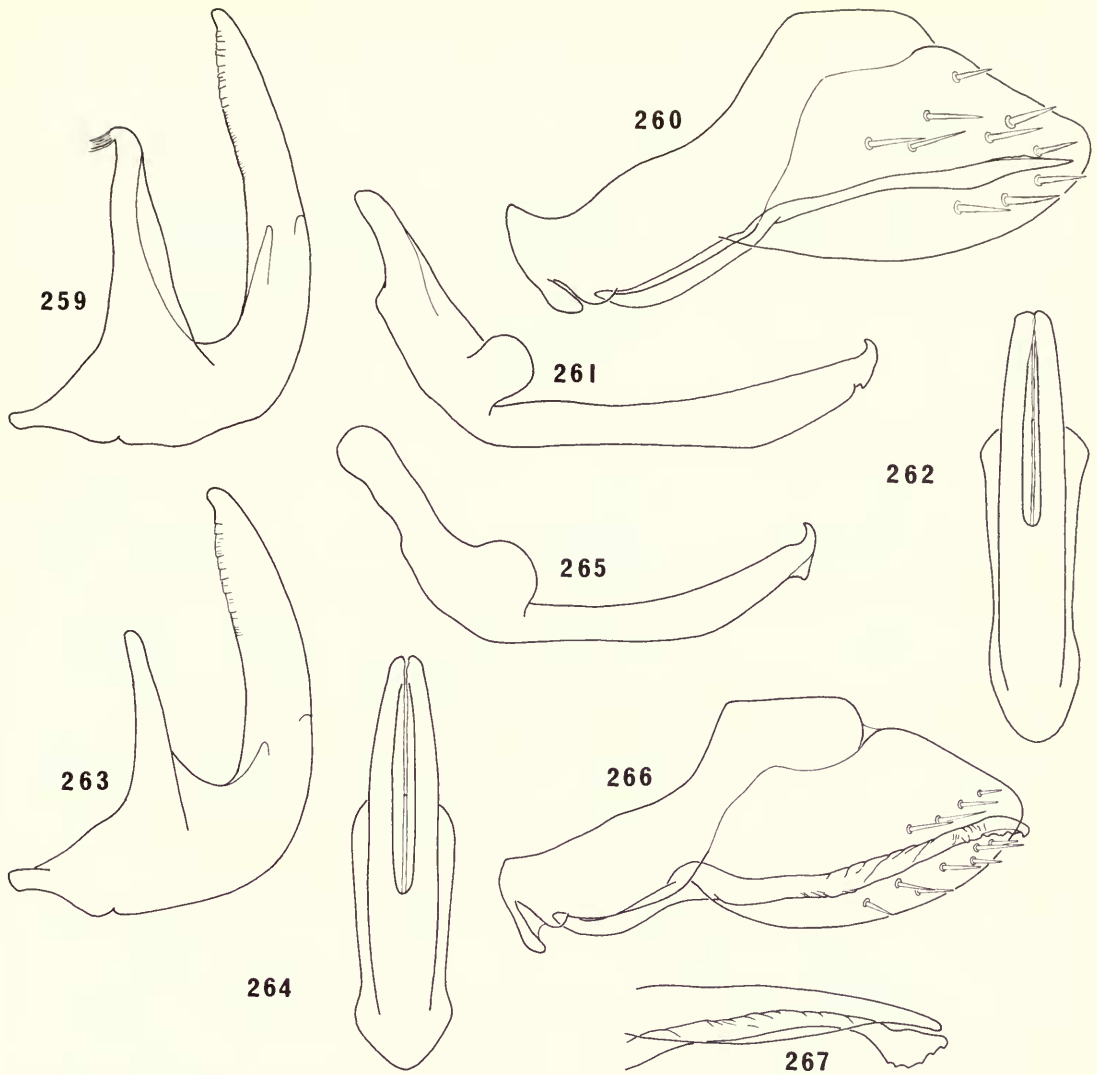
Holotype ♂, **West Malaysia**: Pahang, near Karak, Chintamani, jungle, 20.viii.1935 (BMNH).

***Batracomorphus elissa* sp. n.**

(Figs 263–267)

Length: ♂, 6.08 mm.

Male genitalia. Pygophore processes elongate, directed posteriorly and slightly dorsally, transversely and obliquely wrinkled along their length, apex spatulate and turned mesally with mesal margin serrate. Styles with apical process very slightly expanded distad of midlength, tapering to short acute dorsally hooked apex; a small triangular lamellate expansion subapically on ventral margin. Aedeagus simple; shaft directed dorsally; gonopore extending approximately three-fourths length of shaft; anterior incision extending slightly more basad than gonopore.



Figs 259–267 259–262, *Batracomorpha procris*. (259) aedeagus; (260) pygophore; (261) style; (262) aedeagus. 263–267, *B. elissa*. (263, 264) aedeagus; (265) style; (266) pygophore; (267) left pygophore lobe and process, ventral view. (For further explanation see 'Techniques and methods'.)

REMARKS. This species is unusually long and slender in appearance. It is similar to *ares* from New Guinea but differs in having the pygophore processes more lineate, wrinkled rather than smooth, and spatulate rather than acute apically.

MATERIAL EXAMINED

Holotype ♂, **New Guinea**: Papua New Guinea, Wau, Mt Kaindi, 2360 m, 18.ix.1972 (*J. v. d. Vecht*) (ITZ).

***Batracomorpha sibyl* sp. n.**

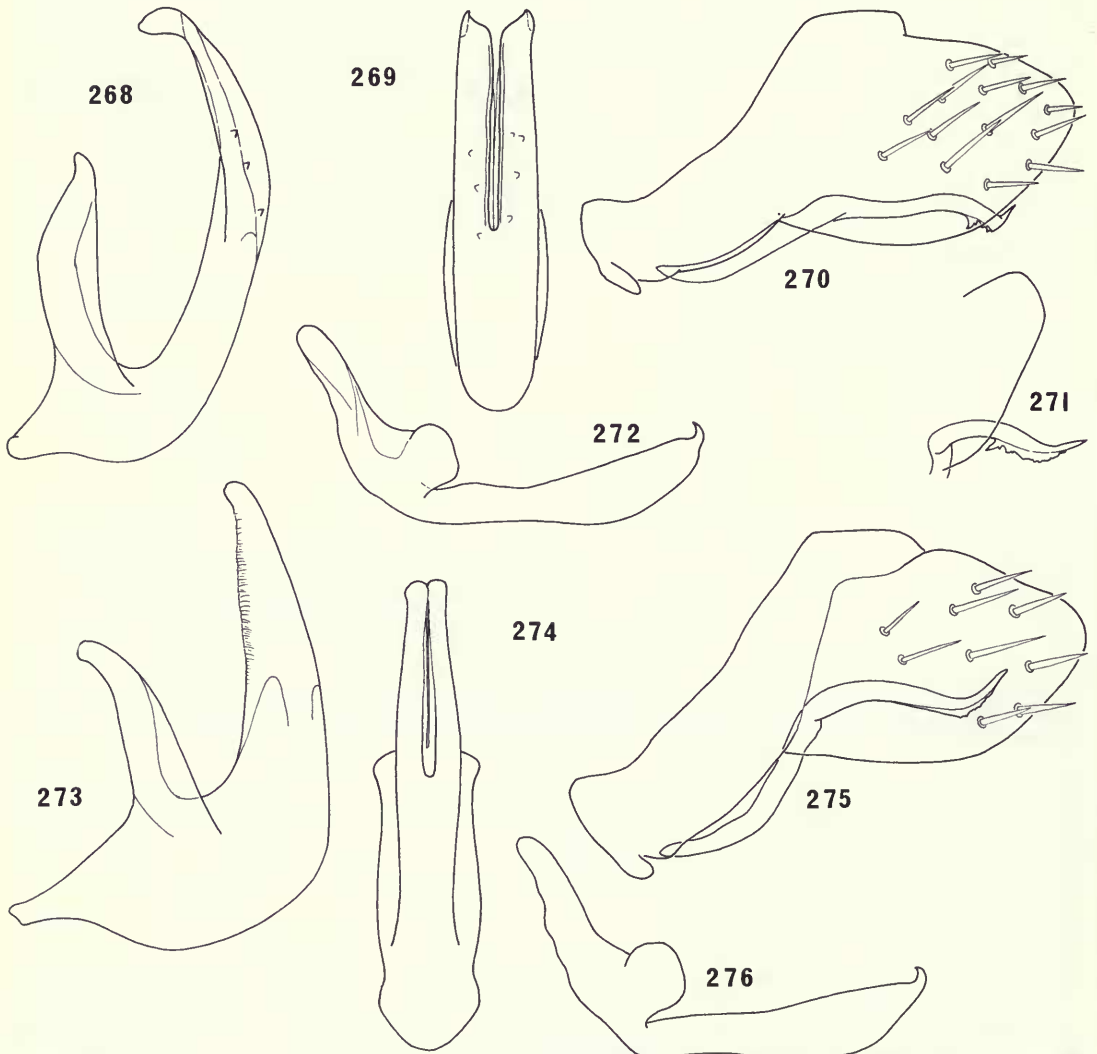
(Figs 268–272)

Length: ♂, 4.72–5.04 mm (mean 4.91 mm).

Male genitalia. Pygophore processes slender, directed posteriorly with apical half turned posteromesally, apex acute, ventral margin acuminate and irregularly serrate over apical third. Styles with apical process

expanded over distal half, tapering to short acute dorsally hooked apex. Aedeagus with shaft directed dorsally and curving anterodorsally over distal half, slender, becoming anteroposteriorly compressed over distal half and terminating in a pair of short anteriorly directed lateral lobes; posterior margin extending keel-like on each side of gonopore over distal half of shaft and with a row of 3–4 small tubercles on each side of gonopore over its basal half; gonopore extending to near midlength of shaft; anterior incision equal in length to gonopore.

REMARKS. This species resembles several others in different aspects of the male genitalia but is readily distinguished from them all. The pygophore process is similar to that in *tithonus* from West Malaysia but is relatively longer and turned mesally. They differ also in the aedeagus which is of the simple basic shape in the West Malaysian species. The aedeagus of the present species is similar to that of *protesilaus* from Borneo in being anteroposteriorly compressed distally and having small tubercles on the posterior margin, but differs in being recurved, having apical lobes and a distinct keel on each side of the gonopore. The two species also differ in the shape of the pygophore process which is relatively simple in *protesilaus*. The anteriorly recurved shaft of the



Figs 268–276 268–272, *Batracomorpha sibil*. (268, 269) aedeagus; (270) pygophore; (271) left pygophore lobe and process, posterolateral view; (272) style. 273–276, *B. tithonus*. (273, 274) aedeagus; (275) pygophore; (276) style. (For further explanation see 'Techniques and methods'.)

aedeagus and the keels bordering the gonopore in the present species are characters which are present also in *teucer* from the Philippines, Borneo and West Malaysia. These two species are also similar in having the pygophore processes turned mesally at the apex, but differ in the shape of the apical expansions on the process as well as the presence of posterior tubercles and apical lobes on the aedeagus of the present species which, in addition, lacks the subapical expansions of the aedeagus present in *teucer*. The present species is known only from the type-locality.

MATERIAL EXAMINED

Holotype ♂, **Borneo**: Sarawak, Mt Dulit, 1220 m, moss forest, 27.x.1932 (*B. M. Hobby & A. W. Moore*) (BMNH).

Paratypes. **Borneo**: 5 ♂, 4 ♀, Sarawak (BMNH).

Batracomorphus tithonus sp. n.

(Figs 273–276)

Length: ♂, 4.24 mm.

Colour of head, pronotum and scutellum brownish, forewings stramineous.

Male genitalia. Pygophore processes slender, directed posteriorly, apex acute and turned dorsoposteriorly, ventral margin acuminate and expanded keel-like over distal third. Styles with apical process expanded over distal half, tapering to short acute dorsally hooked apex. Aedeagus simple; shaft directed dorsally, tapering to apex in lateral aspect; gonopore extending to just basad of midlength of shaft; anterior incision equal in length to gonopore.

REMARKS. This species is similar to *sibyl* from Borneo in the shape of the pygophore processes but differs in the processes being relatively shorter and not turned posteromesally over their distal half. They also differ in the shape of the aedeagus which is of the simple basic type in the present species.

MATERIAL EXAMINED

Holotype ♂, **West Malaysia**: Negri Sembilan, Port Dickson, 5.i.1935 (*H. M. Pendlebury*) (BMNH).

Batracomorphus juturna sp. n.

(Figs 277–281)

Length: ♂, 4.72–4.96 mm (mean 4.83 mm).

Male genitalia. Pygophore processes slender, directed posteriorly and slightly dorsally over basal half and turned slightly ventrally at midlength, slightly expanded on medial margin approximately one-third distance from apex with lateral or ventrolateral margin acutely ridged over distal third, apex acute. Styles with apical process slightly expanded over distal half, tapering to short acute dorsally hooked apex. Aedeagus simple; shaft slender, directed dorsally; gonopore extending to near midlength of shaft; anterior incision approximately equal in length to gonopore.

REMARKS. This species resembles *ganymede* from New Guinea but differs in having the apical portion of the pygophore process less robust, the shaft of the aedeagus more slender and upright and the gonopore and anterior incision relatively shorter. It strongly resembles *pictus* from New Guinea in the shape of the pygophore processes but is much smaller, lacks the dark brown markings on the dorsal surface, and differs also in the shape of the style and aedeagus. It is known only from the type-locality.

MATERIAL EXAMINED

Holotype ♂, **Borneo**: Sabah, Tawau, Quoin Hill, 3–7.vii.1962 (*H. Holmann*) (BPBM, Type No. 12,540).

Paratypes. **Borneo**: 5 ♂, Sabah (BPBM).

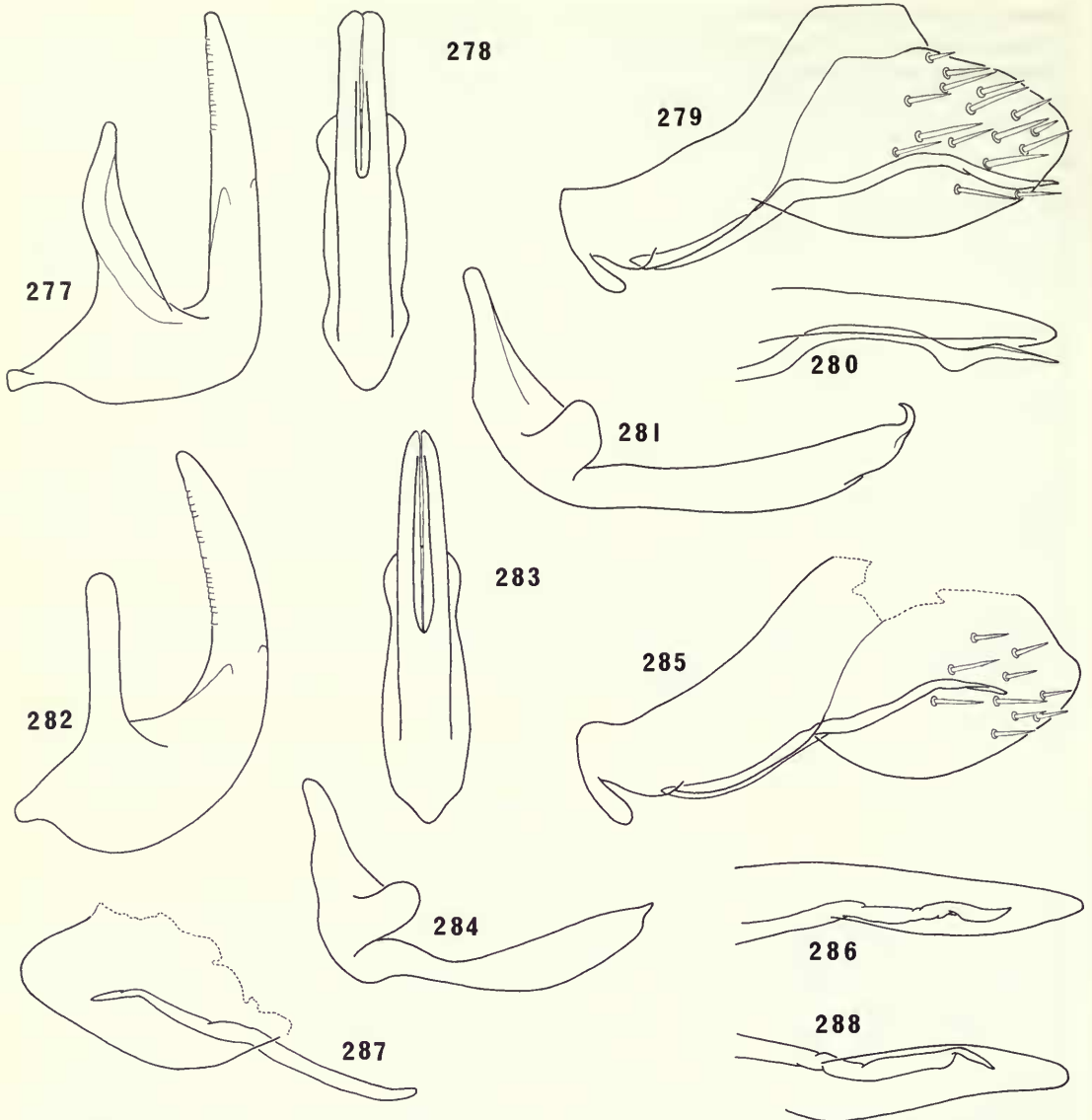
Batracomorphus viridoflavus (Metcalf)

(Figs 282–288)

Bythoscopus viridoflavus Metcalf, 1946: 136. Holotype ♂, GUAM (BPBM) [examined].

Length: ♂, 4.5 mm.

Male genitalia. Pygophore processes slender, directed dorsoposteriorly with apical third turned post-



Figs 277–288 277–281, *Batracomorpha juturna*. (277, 278) aedeagus; (279) pygophore; (280) left pygophore lobe and process, ventral view; (281) style. 282–288, *B. viridoflavidus* (holotype). (282, 283) aedeagus; (284) style; (285) pygophore; (286) left pygophore lobe and process, ventral view; (287) right pygophore lobe and process, right lateral view; (288) same, ventral view. (For further explanation see 'Techniques and methods'.)

eriorly, apex acute. Styles with apical process strongly expanded over distal half, tapering to short acute dorsally hooked apex. Aedeagus simple; shaft slender, directed dorsally and curving slightly anterodorsally from midlength; gonopore extending approximately two-thirds length of shaft; anterior incision extending slightly more basad than gonopore.

REMARKS. This species, described originally from Guam, was recorded by Linnavuori (1960a) from throughout the Caroline Islands. His illustrations, however, indicate that he misidentified this species and that he may have had *silvanus* instead. The only available specimen of *viridoflavidus*, the holotype, shows differences between the left and right pygophore process, that on the left appearing to be more fully developed. The condition of the pygophore processes

suggests that this specimen may be teneral although it shows insufficient resemblance to other known species, especially *atrifrons* and *evander* from Guam, to confirm this.

DISTRIBUTION. East Caroline Atolls, Guam, Kusaie, Palau, Ponape, Saipan, Truk, Yap.

MATERIAL EXAMINED

Bythoscopus viridoflavidus Metcalf, holotype ♂, **Guam**: Mt Alifan, 21.v.1936 (*O. H. Swezey*) (BPBM).

***Batracomorphus pictus* Blöte**

(Figs 289–293)

Batrachomorphus pictus Blöte, 1964: 470. Holotype ♂, **NEW GUINEA** (RNH) [examined].

Length: ♂, 7.0 mm.

Vertex with a large dark brown triangle on each side of midline with a small dark brown spot between each triangle and eye; pronotum with a broad longitudinal band on each side of midline and a series of markings along anterior margin, brown; scutellum brown except midline and anterolateral margins; forewings, except clavus, irregularly mottled with irregularly shaped dark brown marks.

Male genitalia. Pygophore processes slender, directed dorsoposteriorly over basal half, turned posteromesally immediately distad of midlength and then posteroventrally over apical one-fourth, the latter slightly expanded basally and tapering to acute apex, its ventrolateral margin acutely ridged distally and expanded flange-like. Subgenital plates normal as in *harpago* but with lateral margin smoothly rounded to base, basal stem indistinct. Styles with apical process long and slender, of approximately uniform width throughout length, tapering distally to short acute dorsally hooked apex; a large keel-like expansion subapically on ventral margin, its edge mildly serrate. Aedeagus simple, its base expanded ventrally; shaft directed dorsally; gonopore extending to approximately midlength of shaft; anterior incision extending slightly more basad than gonopore.

REMARKS. This species is one of four (*pictus*, *theseus*, *cheesmanae* and *coscus*) characterised by the ventral prolongation of the base of the aedeagus and a slender elongate apical process on the style. All four occur in New Guinea and in the case of *cheesmanae* also in New Britain. A tendency towards the ventral prolongation of the aedeagus is seen in certain other New Guinea species (*laertes*, *portunus*, *rhea*, *daunus*, *numa* and *virbius*) but they all differ from those in the present group by having a more normally shaped apical process on the style. The subgenital plates in the present species differ from normal in lacking a distinct basal stem. This is due to the extension of the lateral margin basally, thereby enclosing the stem which is still visible within the basal membranes of the plate. This condition is illustrated in Fig. 187 for *anubis* in which a similar development has occurred. A similar 'loss' of the basal stem has occurred in the species *acestes* (p. 162) to *cycnus* (p. 177) and in *lentiginosus*, *dymas* and *remus* although accompanied in their case by the actual loss of either the dorsal or ventral row of setae.

DISTRIBUTION. New Guinea.

MATERIAL EXAMINED

Batrachomorphus pictus Blöte, holotype ♂, **New Guinea**: Araboebivak, 9.x.1939 (RNH).

***Batracomorphus theseus* sp. n.**

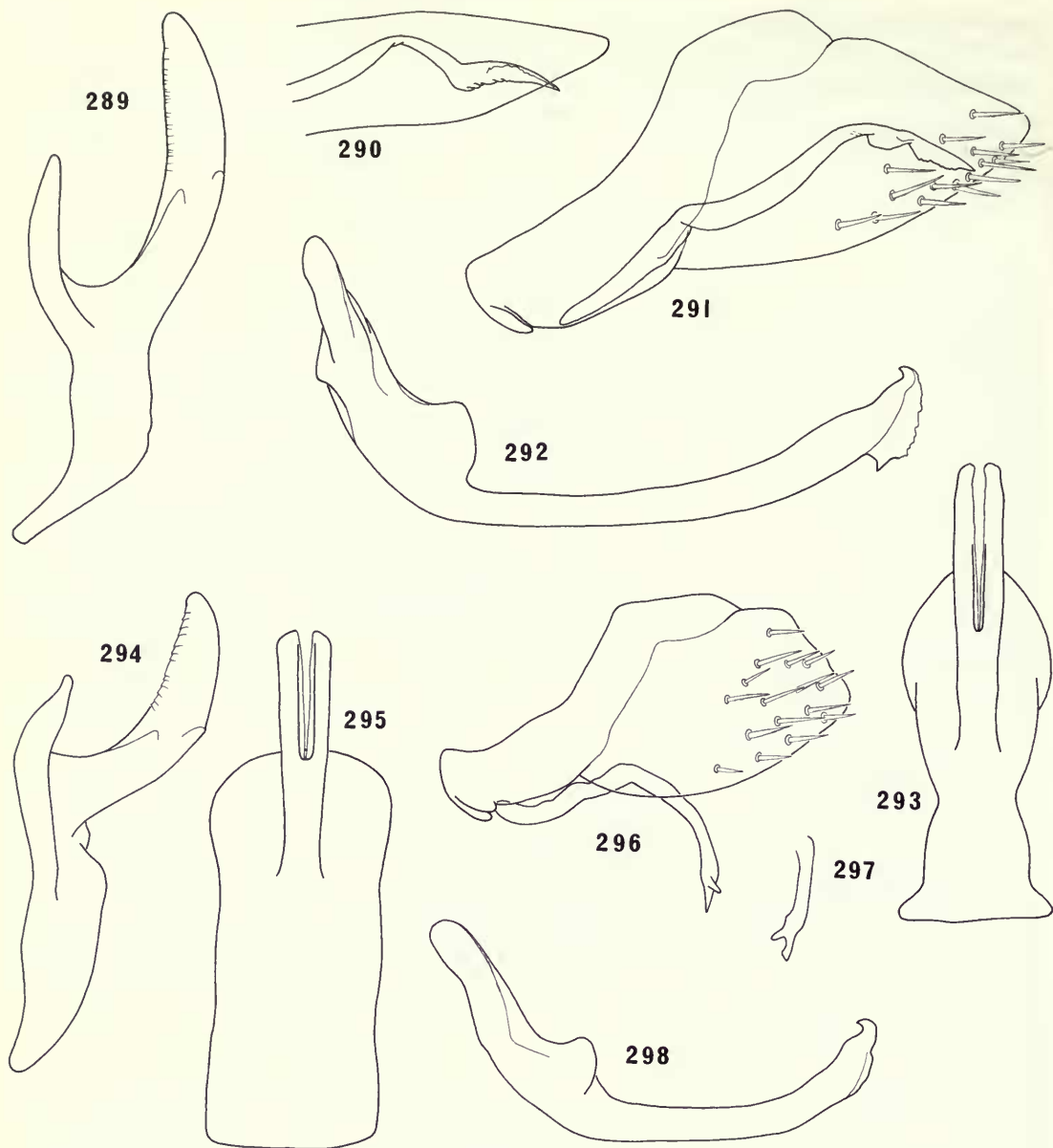
(Figs 294–298)

Length: ♂, 4.80 mm.

Forewings speckled with small dark brown spots.

Male genitalia. Pygophore processes slender, directed posteriorly and curving ventrally, apex slightly expanded and bifurcate, the two branches short and sclerotised. Styles with apical process slender, elongate, of uniform width throughout length, curving dorsally towards apex, terminating in a short acute dorsally hooked apex, ventral margin acutely ridged subapically. Aedeagus simple, its base strongly expanded ventrally; shaft directed dorsally; gonopore extending to approximately midlength of shaft; anterior incision extending slightly more basad than gonopore.

REMARKS. The orientation of the pygophore processes suggests that the single known specimen of this species may be abnormal in this respect and that the processes are usually directed more



Figs 289–298 289–293, *Batracomorphus pictus* (holotype). (289) aedeagus; (290) left pygophore lobe and process, ventral view; (291) pygophore; (292) style; (293) aedeagus. 294–298, *B. theseus*. (294, 295) aedeagus; (296) pygophore; (297) left pygophore process, posterior view; (298) style. (For further explanation see ‘Techniques and methods’.)

posteriorly with only the apical portion turned ventrally. The present species is similar to *cheesmanae* from New Guinea and New Britain but differs in the shape of the apex of the pygophore process. (See additional remarks under *pictus*.)

MATERIAL EXAMINED

Holotype ♂, **New Guinea**: Papua New Guinea, Madang District, Finisterre Mountains, Damanti, 1082 m, 2–11.x.1964 (*M. E. Bacchus*) (BMNH).

***Batracomorphus cheesmanae* sp. n.**

(Figs 299–305)

Length: ♂, 4.00–5.20 mm (mean 4.60 mm).

Pronotum, scutellum and forewings speckled with variably sized dark brown spots.

Male genitalia. Pygophore processes slender, directed posteriorly, turned ventrally or posteromedially near midlength, apex turned dorsally, ventral margin acutely ridged and serrate subapically. Styles with apical process slender, elongate, of approximately uniform width throughout length, curving dorsally towards apex, terminating in a short acute dorsally hooked apex, ventral margin sometimes acutely ridged subapically. Aedeagus simple, its base strongly expanded ventrally; shaft directed dorsally; gonopore extending to just basad of midlength of shaft; anterior incision approximately equal in length to gonopore.

REMARKS. This species, known from Waigeu, the western and eastern ends of New Guinea and from New Britain, varies in the shape of the apex of the pygophore processes, the style and in overall body size. Specimens from the Cyclops Mountains and New Britain have the upturned apical portion of the pygophore processes relatively longer than in specimens from the Finisterre Mountains and Waigeu. The upturned apical portion of the style is also relatively longer in individuals from the Finisterre Mountains than elsewhere although intermediate forms are present in the Cyclops Mountains populations. As regards overall body size, short forms occur in Waigeu and in half of the Cyclops Mountains population although there is no detectable correlation with the shape of the genitalia. This species is similar to *theseus* in the shape of the aedeagus but differs in the shape of the pygophore processes. The pygophore processes resemble those in *cozzus*, but the apical expansion is relatively smaller. The two species also differ in size, external markings and in the shape of the aedeagus. (See additional remarks under *pictus*.)

MATERIAL EXAMINED

Holotype ♂, **New Guinea**: Irian Jaya, Cyclops Mountains, Sabron, 610 m, vii.1936 (*L. E. Cheesman*) (BMNH).

Paratypes. **New Britain**: 1 ♂, 1 ♀ (BPBM). **New Guinea**: 7 ♂, Irian Jaya and Papua New Guinea (BMNH).

***Batracomorphus cozzus* sp. n.**

(Figs 306–310)

Length: ♂, 6.00 mm.

Male genitalia. Pygophore processes slender, directed dorsoposteriorly, apex turned mesally and strongly expanded into triangular lamellate plate, its posterior margin serrate. Styles with apical process slender, elongate, of approximately uniform width throughout length, turned dorsally towards apex, tapering to short acute dorsally hooked apex, ventral margin with prominent lamellate expansion subapically. Aedeagus simple, its base strongly expanded ventrally; shaft directed dorsally; gonopore extending to just basad of midlength of shaft; anterior incision extending more basad than gonopore.

REMARKS. This species is similar to *cheesmanae* from New Guinea and New Britain but is larger, lacks the dark brown spots on the pronotum, scutellum and forewings, and has a relatively larger expansion at the apex of the pygophore processes. They also differ in the shape of the aedeagus and the expansion at the apex of the style. (See additional remarks under *pictus*.)

MATERIAL EXAMINED

Holotype ♂, **New Guinea**: Papua New Guinea, Aiyura, 27.ix.1957 (*J. Smart*) (BMNH).

***Batracomorphus elegans* (Evans)**

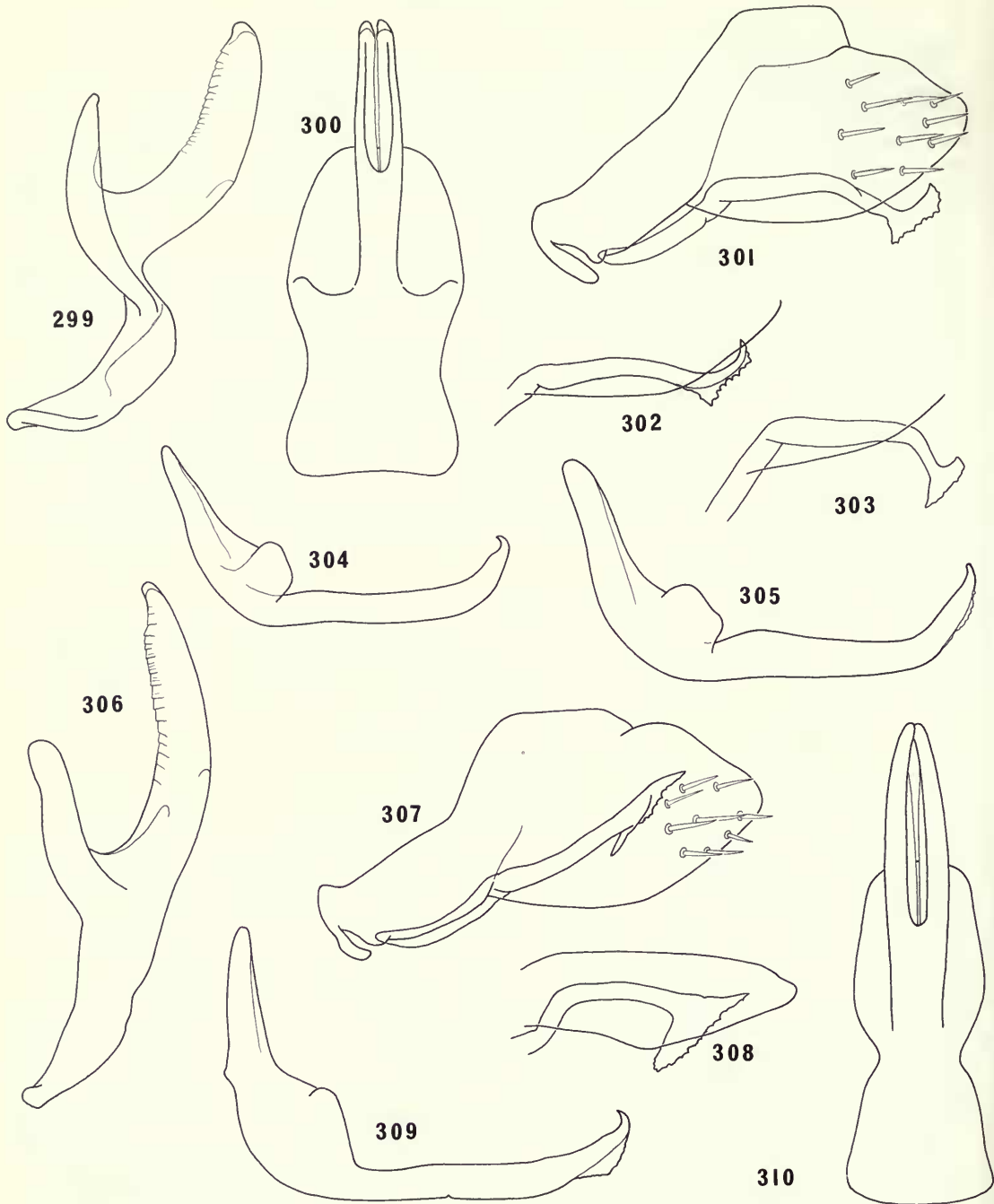
(Figs 311–313)

Eurinoscopus elegans Evans, 1935: 76. Holotype ♂, TASMANIA (AM) [examined].

Length: ♂, 5.5 mm.

Anterior area of face reddish brown; pronotum with three longitudinal reddish bands on each side of midline; scutellum with basal angles reddish.

Male genitalia. Pygophore processes slender, directed posteriorly, lamellately expanded distally and



Figs 299–310 299–305, *Batracomorphus cheesmanae*. (299, 300) aedeagus; (301) pygophore (Cyclops Mts, New Guinea); (302) left pygophore process (New Britain); (303) same (Finisterre Mts, New Guinea); (304) style (Cyclops Mts); (305) same (Finisterre Mts). 306–310, *B. cossus*. (306) aedeagus; (307) pygophore; (308) left pygophore lobe and process, posteroventral view; (309) style; (310) aedeagus. (For further explanation see 'Techniques and methods'.)

tapering abruptly to acute apex, dorsal margin of expansion mildly serrate. Styles with apical process expanded over distal half, tapering to short acute dorsally hooked apex. Aedeagus simple; shaft directed dorsally, curving anterodorsally from midlength; gonopore extending approximately two-thirds length of shaft; anterior incision extending slightly more basad than gonopore.

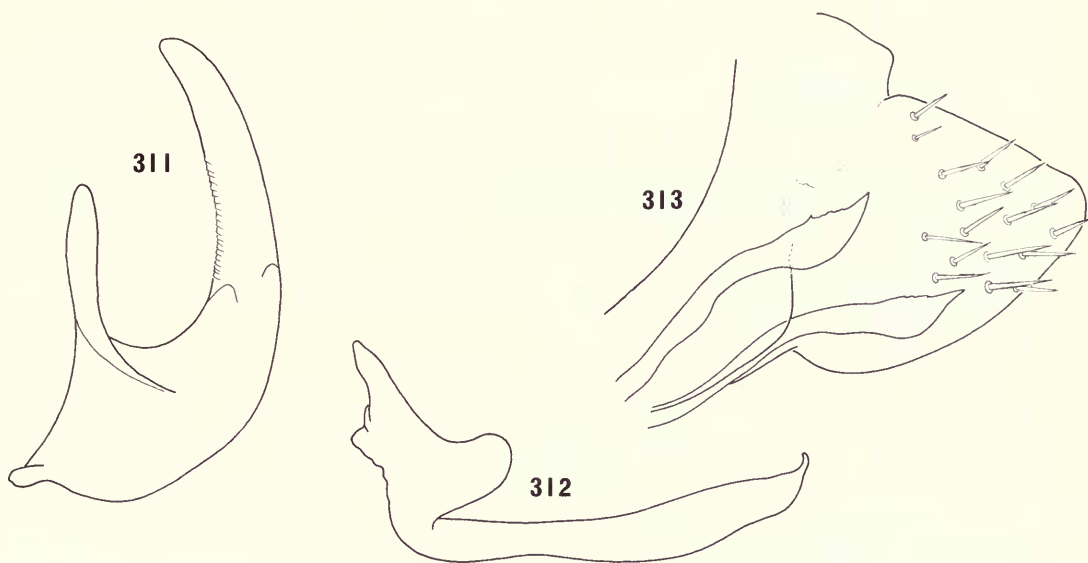
REMARKS. The genitalia of the holotype are mounted on a slide and the pygophore processes consequently distorted. The orientation of these structures may therefore differ from the description given above. The species appears to be most closely related to *ganymede* from New Guinea but is slightly larger and with the pygophore processes more lineate and less claw-like apically. They also differ slightly in the shape of the aedeagus and style.

DISTRIBUTION. Australia.

MATERIAL EXAMINED

Eurinoscopus elegans Evans, holotype ♂, Australia: Tasmania, Hobart (*Lea*) (AM).

Australia: 1 ♀, Tasmania (BMNH).



Figs 311–313 *Batracomorphus elegans* (holotype). 311, aedeagus; 312, style; 313, pygophore, left lateral view, slide preparation showing left and right processes. (For further explanation see 'Techniques and methods'.)

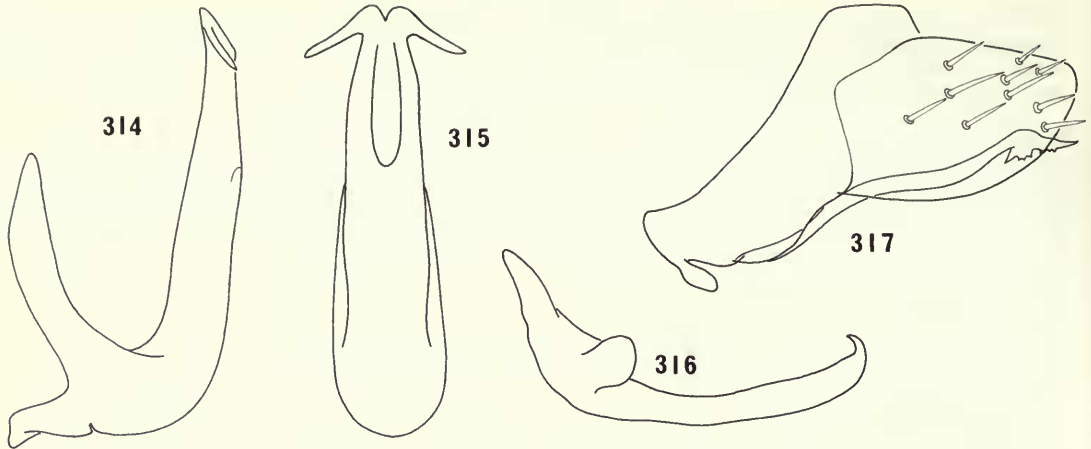
***Batracomorphus rhesus* sp. n.**

(Figs 314–317)

Length: ♂, 4.16–4.40 mm (mean 4.28 mm).

Male genitalia. Pygophore processes slender, directed posteriorly at base, turned dorsoposteriorly near midlength, apical portion turned posteriorly with its ventral margin strongly dentate, apex acute and sometimes slightly upturned. Styles with apical process slender, elongate, of approximately uniform width throughout length, terminating in short acute dorsally hooked apex. Aedeagus with shaft directed dorsally, terminating in a pair of short, ventrally directed, diverging processes; gonopore extending approximately two-fifths length of shaft; anterior incision very short.

REMARKS. This species differs from all others with normal subgenital plates in having apical processes on the aedeagus. The presence of such processes in other species is always accompanied by the absence of setae on either the dorsal or ventral margin of the subgenital plates. In general shape of the aedeagus and pygophore process, the present species most closely resembles *laodamia* from the Philippines and Borneo but differs, not only in having setae on the



Figs 314–317 *Batracomorphus rhesus*. 314, 315, aedeagus; 316, style; 317, pygophore. (For further explanation see 'Techniques and methods'.)

dorsolateral margin of the subgenital plates, but also in the shape of the pygophore processes and styles. It is known only from western Mindanao.

MATERIAL EXAMINED

Holotype ♂, **Philippines**: Mindanao, Zamboanga del Norte Manucan, 25 km S, 500 m, 18.x.1959 (*L. W. Quate*) (BPBM, Type No. 12,541).

Paratype. **Philippines**: 1 ♂, Mindanao (BPBM).

***Batracomorphus procne* sp. n.**

(Figs 318–327)

Length: ♂, 3.76–4.96 mm (mean 4.12 mm).

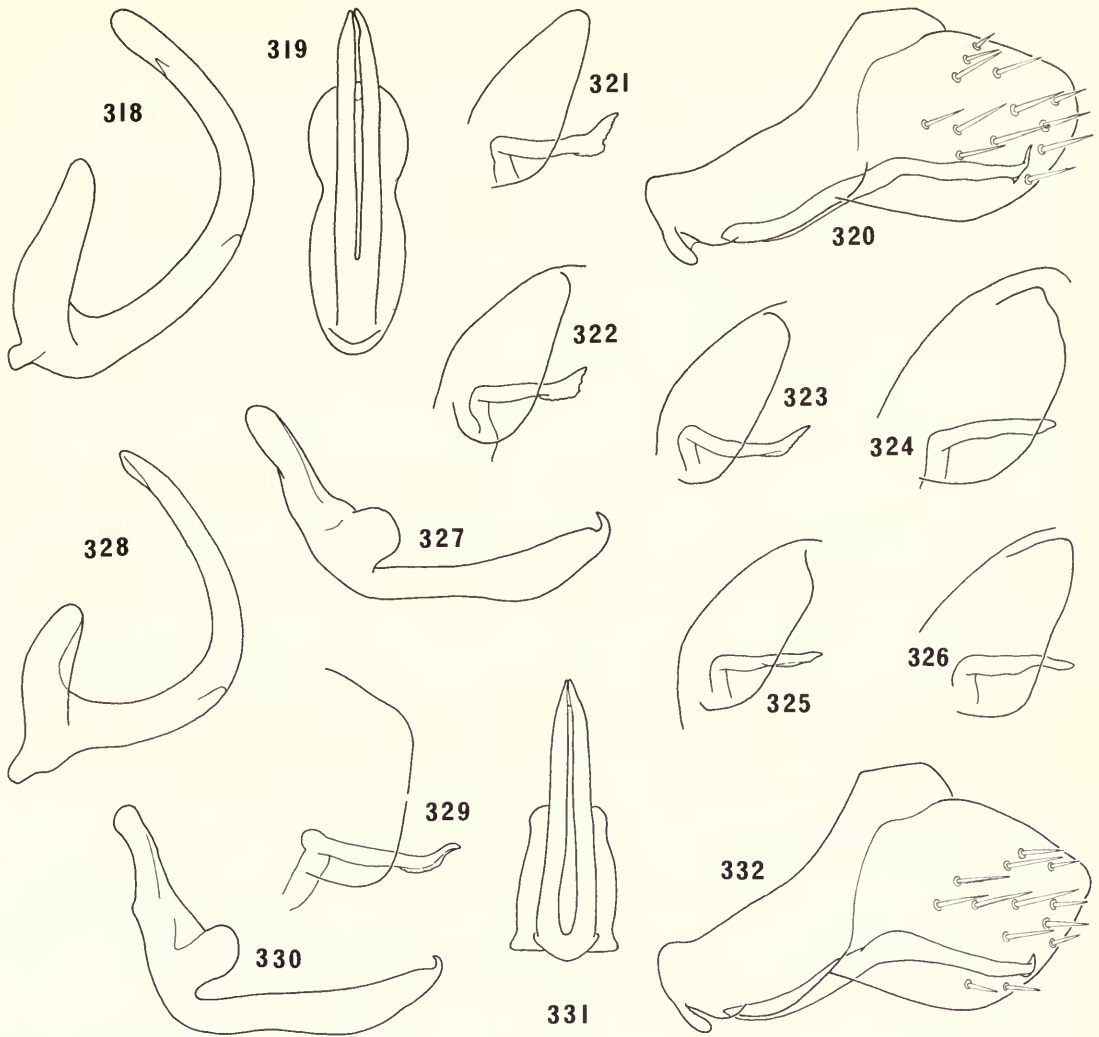
Male genitalia. Pygophore processes slender, directed posteriorly, apex acute, turned dorsomesally, a keel-like expansion subapically on ventral margin sometimes reduced or absent. Styles with apical process expanded over distal half, tapering to short acute dorsally directed apex. Aedeagus simple; shaft elongate, slender, directed dorsoposteriorly and curving anterodorsally; gonopore extending to just basad of midlength of shaft; anterior incision short.

REMARKS. The variation in the development of the apical expansion on the pygophore process often occurs within the same population as illustrated for the two specimens from Mindanao and the three specimens from Sabah. The present species is one of four closely related species (*procne*, *chlorophana*, *evander* and *silvanus*) characterised by the possession of an elongate and strongly recurved shaft to the aedeagus. It is most closely related to *chlorophana*, whose distribution is similar, but differs in the absence of a ventral extension at the base of the aedeagus and the normally larger expansion at the apex of the pygophore process. The reduced condition of the pygophore processes in the present species resembles the condition in *silvanus* from the Philippines and Borneo, but the latter species is distinguished by having a relatively shorter and less recurved shaft to the aedeagus and a subapical expansion on the ventral margin of the style.

MATERIAL EXAMINED

Holotype ♂, **Borneo**: Sabah, Tawau, Quoin Hill, Cocoa Research Station, 10.ix.1962 (*Y. Hirashima*) (BPBM, Type No. 12,542).

Paratypes. **Borneo**: 30 ♂, Sabah and Sarawak (BPBM). **Java**: 2 ♂, (BMNH, ITZ). **Philippines**: 20 ♂, 5 ♀, Leyte, Luzon, Mindanao, Palawan and Tawi Tawi (AMNH, BPBM, FMNH, USNM). **Sumatra**: 7 ♂, 1 ♀ (ITZ, USNM). **West Malaysia**: 3 ♂ (BMNH).



Figs 318–332 318–327, *Batracomorphus proce*. (318, 319) aedeagus; (320) pygophore (Tawau, Sabah); (321) left pygophore lobe and process (Mindanao), posterolateral view; (322) same (Tawau, Sabah); (323) same (Tawau, Sabah); (324) same (Java); (325) same (Tawau, Sabah); (326) same (Mindanao); (327) style. 328–332, *B. chlorophana*. (328) aedeagus; (329) left pygophore lobe and process, posterolateral view; (330) style; (331) aedeagus; (332) pygophore. (For further explanation see 'Techniques and methods'.)

***Batracomorphus chlorophana* (Melichar) sp. rev., comb. n.**

(Figs 328–332)

Pachyopsis chlorophana Melichar, 1903: 153. Lectotype ♂, SRI LANKA (MM) [examined], here designated.

[*Iassus indicus* (Lethierry) sensu Metcalf, 1966: 53. Misidentification.]

[*Batracomorphus indicus* (Lethierry) sensu Linnavuori & Quartau, 1975: 144. Misidentification.]

Length: ♂, 4.08–4.56 mm (mean 4.32 mm).

Male genitalia. Pygophore processes slender, directed posteriorly or ventroposteriorly with apex acute and turned mesally or dorsomesally, a shallow keel-like expansion subapically on ventral margin. Styles with apical process expanded over distal half, tapering to short acute dorsally hooked apex. Aedeagus

simple; shaft elongate, slender, directed posteriorly and curving anterodorsally; gonopore extending approximately two-thirds length of shaft; anterior incision very short.

REMARKS. The present species is mostly closely related to *procne* in having a subapical marginal expansion on the pygophore process but differs in that the expansion is smaller than in *procne* and the base of the aedeagus has a pronounced ventral extension and the shaft is directed more posteriorly at its base. The geographical distribution of these two species is very similar. (See additional remarks under *procne*.)

The type-series of *chlorophana*, deposited in MM, comprises two males and two females from Peradeniya, Sri Lanka. One of the males is parasitized and the other bears a lectotype label. In the absence of a previously published designation the latter specimen is here designated as lectotype. This species was considered by Metcalf (1966) and Linnavuori & Quartau (1975) as a synonym of *indicus* (Lethierry). The type-specimens of each species, however, are quite distinct and *chlorophana* is here recalled from synonymy. The previously recorded distribution of this species extends from Africa to Samoa and the Marquesas Islands. Linnavuori & Quartau (1975) consider the record for Africa to be incorrect and the present study was unable to confirm its presence in either Samoa or the Marquesas Islands. It is likely that the records for these three localities are based on misidentifications.

DISTRIBUTION. Africa, Borneo*, Burma, Taiwan, India, Java, Marquesas Islands, Philippines, Samoa, Sri Lanka, West Malaysia* (* new records).

MATERIAL EXAMINED

Pachyopsis chlorophana Melichar, lectotype ♂, Sri Lanka: Peradeniya, 30.xii.1901 (*H. Uzel*) (MM).

Borneo: 83 ♂, 3 ♀, Sabah and Sarawak (BMNH, BPBM). Java: 1 ♂, 1 ♀ (BMNH). Philippines: 11 ♂, Balabac, Palawan and Tawi Tawi (ZM). Sri Lanka: 1 ♂, 2 ♀ (MM). West Malaysia: 1 ♂ (BMNH).

***Batracomorphus evander* sp. n.**

(Figs 333–337)

[*Bythoscopus viridoflavidus* Metcalf, 1946: 136 (partim). Misidentification.]

Length: ♂, 3.44 mm.

Male genitalia. Pygophore processes slender, directed posteriorly, apex acute and turned dorsomesally. Styles with apical process only slightly expanded over distal half, tapering to short acute dorsally hooked apex, a small subapical tooth on ventral margin. Aedeagus simple; shaft elongate, slender, directed dorsally and curving anterodorsally; gonopore extending to near midlength of shaft; anterior incision very short.

REMARKS. The present species is most closely related to *silvanus* from the Philippines and Borneo but is much smaller, has a relatively shorter and more posteriorly directed pygophore process and a more elongate and recurved shaft to the aedeagus. (See additional remarks under *procne*.) The holotype of this species was incorrectly identified by Metcalf as *viridoflavidus* and designated as a paratype of that species. It differs from that species, however, in length and in the shape of the pygophore processes, style and aedeagus.

MATERIAL EXAMINED

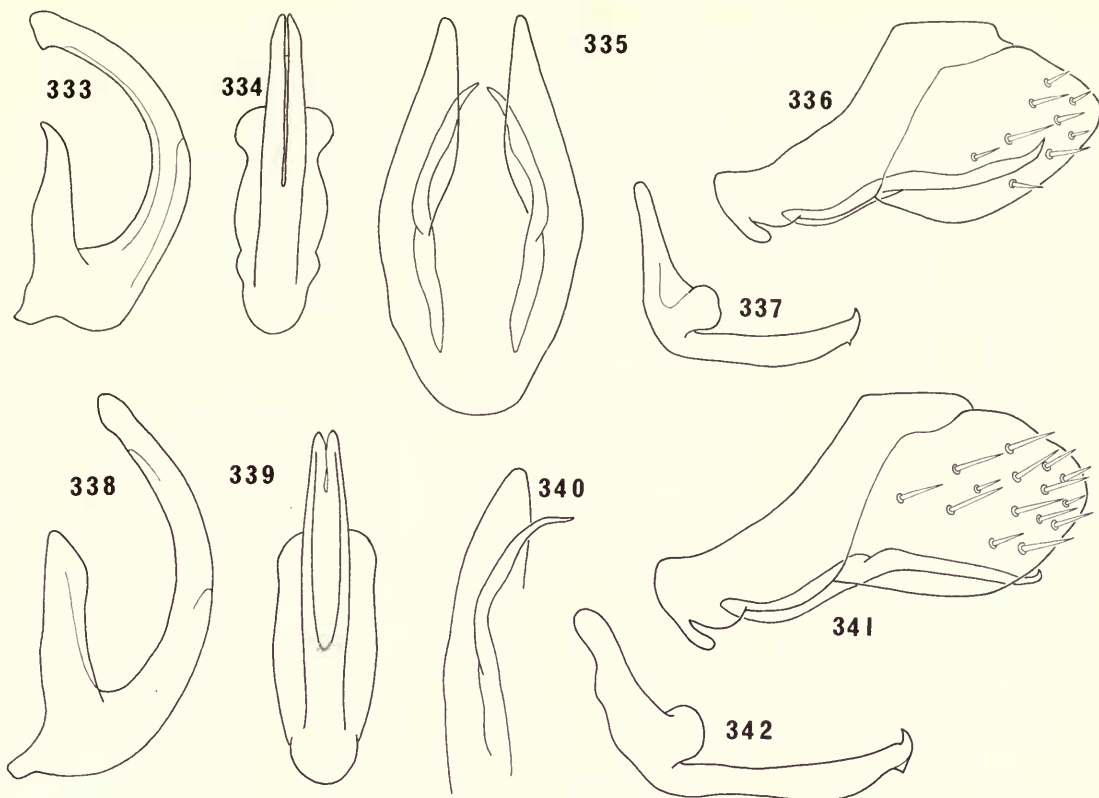
Holotype ♂, Guam: Mt Alifan, 20.iv.1936 (*E. H. Bryan*) (NCSU) (paratype of *Bythoscopus viridoflavidus* Metcalf).

***Batracomorphus silvanus* sp. n.**

(Figs 338–342)

Length: ♂, 4.24–4.80 mm (mean 4.54 mm).

Male genitalia. Pygophore processes slender, elongate, directed posteriorly or ventroposteriorly, apex acute and turned medially. Styles with apical process expanded over distal half, tapering to short acute dorsally hooked apex, a small triangular lamellate expansion subapically on ventral margin. Aedeagus simple; shaft slender, elongate, directed dorsally and curving anterodorsally; gonopore extending to just basad of midlength of shaft; anterior incision short.



Figs 333–342 333–337, *Batracomorphus evander*. (333, 334) aedeagus; (335) pygophore, ventral view; (336) pygophore; (337) style. 338–342, *B. silvanus* (Philippine specimen). (338, 339) aedeagus; (340) left pygophore lobe and process, ventral view; (341) pygophore; (342) style. (For further explanation see 'Techniques and methods'.)

REMARKS. The present species is most closely related to *evander* from Guam but is larger, with the pygophore processes relatively longer and turned medially and the shaft of the aedeagus less recurved. (See additional remarks under *procne*.) This species appears to be the one erroneously described by Linnavuori (1960a) as *viridoflavidus* and recorded from the S. Mariana Islands and Caroline Islands.

MATERIAL EXAMINED

Holotype ♂, **Philippines:** Luzon, Camarines Sur, Mt Isarog, Pili, 800–1000 m, 3.v.1965 (*H. M. Torrevillas*) (BPBM, Type No. 12,543).

Paratypes. **Ambon Island:** 1 ♂, 3 ♀ (USNM). **Borneo:** 2 ♂, Sabah (BPBM). **Philippines:** 13 ♂, Luzon, Mindanao, Palawan and Tawi Tawi (BPBM, USNM, ZM).

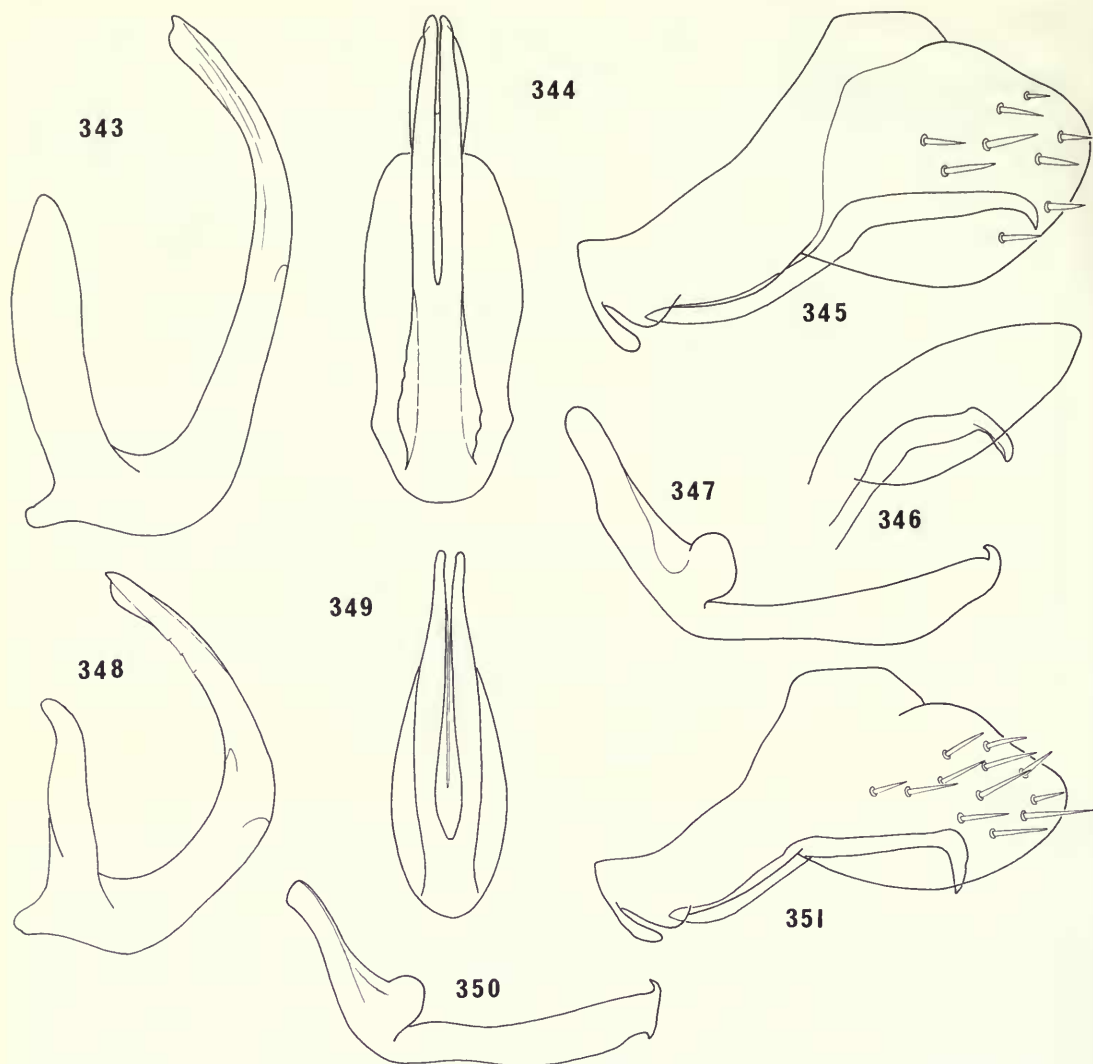
***Batracomorphus romulus* sp. n.**

(Figs 343–347)

Length: ♂, 4.32 mm.

Male genitalia. Pygophore processes elongate, directed posteriorly, apex acute and turned ventromesally, ventral margin acuminate and slightly keeled subapically. Styles with apical process expanded over distal half, tapering to short acute dorsally hooked apex. Aedeagus with shaft slender, elongate, directed dorsally, apical third recurved anterodorsally, posterolateral margins expanded keel-like at base; gonopore extending to near midlength of shaft; anterior incision approximately one-fourth length of gonopore.

REMARKS. This species is closely related to *pandarus* from Borneo but differs in having the shaft of the aedeagus more slender, curved more anteriorly and with basal expansions.



Figs 343–351 343–347, *Batracomorphus romulus*. (343, 344) aedeagus; (345) pygophore; (346) left pygophore lobe and process, posterior view; (347) style. 348–351, *B. pelops*. (348, 349) aedeagus; (350) style; (351) pygophore. (For further explanation see 'Techniques and methods'.)

MATERIAL EXAMINED

Holotype ♂, **Borneo**: Sabah, Tawau, Quoin Hill, 3–7.vii.1962 (*H. Holtmann*) (BPBM, Type No. 12,544).

***Batracomorphus pelops* sp. n.**

(Figs 348–351)

Length: ♂, 4.56 mm.

Forewings speckled with very small dark brown spots.

Male genitalia. Pygophore processes elongate, directed posteriorly, apical one-fourth turned abruptly ventrally and slightly expanded, apex acute. Styles with apical process slightly expanded over distal half, tapering to short acute dorsally hooked apex, a triangular lamellate expansion subapically on ventral margin. Aedeagus with shaft slender, elongate, directed dorsoposteriorly and curving anterodorsally at midlength; a pair of small triangular expansions subapically on anterior margin; gonopore extending approximately two-thirds length of shaft; anterior incision extending to midlength of shaft.

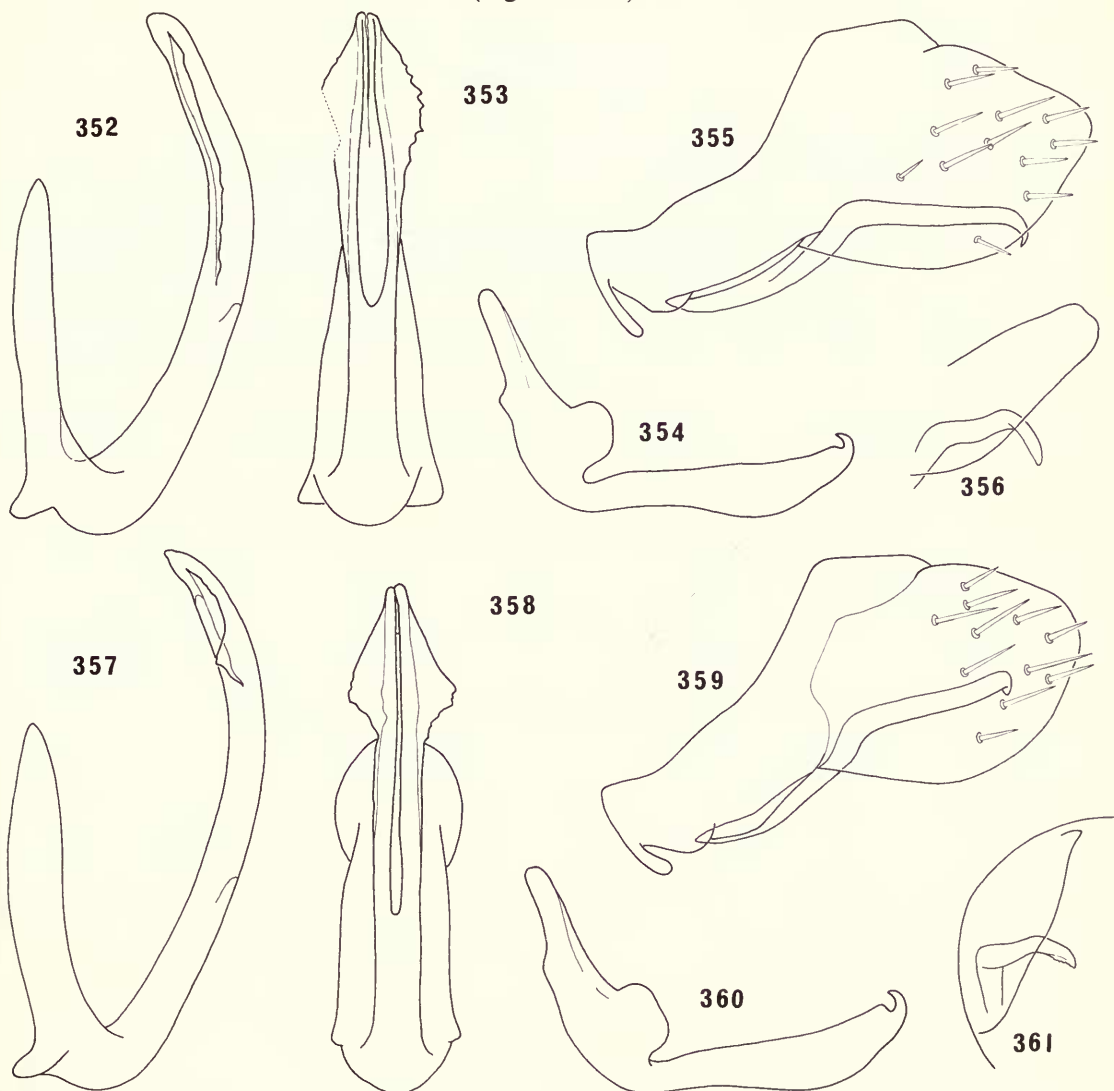
REMARKS. This species resembles *procne*, *chlorophana*, *evander* and *silvanus* in the general shape of the aedeagus but differs from all four in having a long rather than short anterior incision. It differs from them also in the shape of the pygophore processes and in having dark brown spots on the forewings. It is most closely related to *romulus* from Borneo but differs in having the shaft of the aedeagus more strongly recurved and the anterior incision relatively longer, the pygophore processes turned more abruptly ventrally, the style with a subapical expansion on the ventral margin and the forewings speckled with small dark brown spots.

MATERIAL EXAMINED

Holotype ♂, **Sulawesi**: Minahassa, Tomohon, 30.vii.1954 (*A. H. G. Alston*) (BMNH).

***Batracomorphus peteos* sp. n.**

(Figs 352–361)



Figs 352–361 *Batracomorphus peteos*. 352–356, Sarawak specimen; 357–361, Sabah specimen. (352, 353) aedeagus; (354) style; (355) pygophore; (356) left pygophore lobe and process, posterior view; (357, 358) aedeagus; (359) pygophore; (360) style; (361) left pygophore lobe and process, posterior view. (For further explanation see 'Techniques and methods'.)

Length: ♂, 4.40–4.88 mm (mean 4.64 mm).

Male genitalia. Pygophore processes slender, elongate, directed posteriorly or dorsoposteriorly, apex acute, turned mesally, ventral margin sometimes acuminate subapically. Styles with apical process expanded over distal half, tapering to short acute dorsally hooked apex. Aedeagus with shaft slender, elongate, directed dorsally with apical third curving anterodorsally; lateral margin over distal one-fourth to one-half expanded as lamellate triangular flange; gonopore extending to just basad of midlength of shaft; anterior incision short.

REMARKS. This species is closely related to *romulus* from Borneo but has apical rather than basal expansions on the shaft of the aedeagus.

MATERIAL EXAMINED

Holotype ♂, **Borneo**: Sarawak, Mt Dulit, 1220 m, moss forest, 17.x.1932 (*B. M. Hobby & A. W. Moore*) (BMNH).

Paratypes. **Borneo**: 1 ♂, 1 ♀, Sabah and Sarawak (BMNH, BPBM).

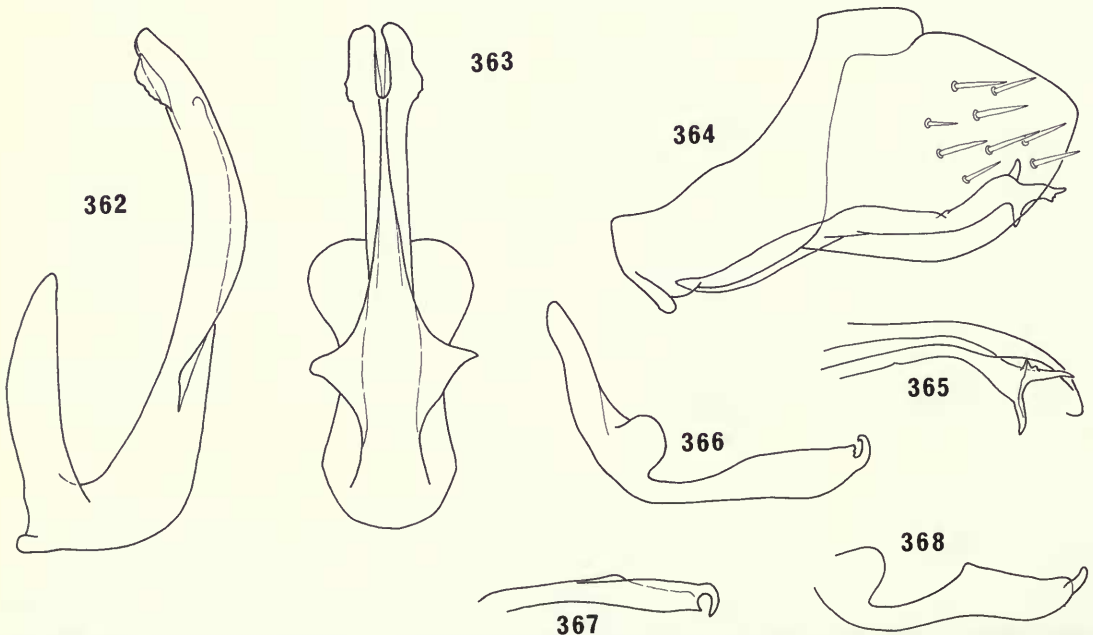
Batracomorphus itys sp. n.

(Figs 362–368)

Length: ♂, 4.40–4.64 mm (mean 4.49 mm).

Male genitalia. Pygophore processes directed posteriorly, turned dorsoposteriorly distally, terminating in three short acute branches, one directed posteriorly, another ventrally and the third mesally, the ventral margin between ventral and posterior branch and between ventral and mesal branch acutely ridged. Styles with apical process strongly expanded over distal half with pronounced lateral prominence at midlength; abruptly narrowed subapically to short finger-like dorsally hooked apex. Aedeagus with shaft slender, directed dorsally, recurved anterodorsally over apical half; a pair of lateral triangular, lamellate expansions immediately basad of midlength, continuing apically as a pair of narrow keel-like expansions on posterior margin to gonopore; apex with a pair of small lamellate expansions laterally; gonopore and anterior incision short, of approximately equal length.

REMARKS. The specimens from Palawan and West Malaysia lack the lateral triangular expansions at the midlength of the aedeagus but are otherwise identical to the holotype. The species



Figs 362–368 *Batracomorphus itys* (Sumatra specimen). 362, 363, aedeagus; 364, pygophore; 365, left pygophore lobe and process, ventral view; 366, style; 367, same, mesoventral view; 368, same, ventral view. (For further explanation see 'Techniques and methods'.)

appears to be most closely related to *peteos* from Borneo but differs in the size and shape of the expansions on the aedeagus, the relative length of the gonopore, and in the shape of the pygophore processes. The pygophore processes in the present species are superficially similar to those of *dido* from the Philippines but the two differ markedly in the shape of both the aedeagus and style.

MATERIAL EXAMINED

Holotype ♂, **Sumatra**: west (USNM).

Paratypes. **Philippines**: 1 ♂, Palawan (ZM). **Sumatra**: 2 ♂ (USNM). **West Malaysia**: 1 ♂ (BMNH).

***Batracomorphus pandarus* sp. n.**

(Figs 369–373)

Length: ♂, 4.40–5.20 mm (mean 4.76 mm).

Male genitalia. Pygophore processes slender, directed posteriorly, apex turned medially, acutely rounded or obliquely truncate. Styles with apical process expanded over distal half, tapering to short acute dorsally hooked apex. Aedeagus with shaft slender, directed dorsally with apical one-fourth curving anterodorsally, tapering to apex in both lateral and posterior aspect, anterolateral margins produced flange-like apically and turned anteriorly; gonopore extending approximately two-fifths length of shaft, sometimes bordered over its distal half with a few minute tubercles; anterior incision extending approximately half length of gonopore.

REMARKS. This species resembles *romulus* from Borneo but has a more robust aedeagus and lacks the lateral flange-like expansions at the base of the shaft.

MATERIAL EXAMINED

Holotype ♂, **Borneo**: Sabah, Tenompok, 1460 m, Jesselton, 48 km E., 17–21.x.1958 (*T. C. Maa*) (BPBM, Type No. 12,545).

Paratypes. **Borneo**: 2 ♂, Sabah and Sarawak (BPBM).

***Batracomorphus protesilaus* sp. n.**

(Figs 374–379)

Length: ♂, 4.64 mm.

Male genitalia. Pygophore processes slender, directed posteriorly, apex spatulate, obliquely truncate, turned mesally. Styles with apical process expanded over distal half, tapering to short acute dorsally hooked apex. Aedeagus with shaft directed dorsally, compressed anteroposteriorly with lateral margins acuminate, tapering to apex in lateral aspect, apex broadly rounded in posterior aspect, posterior surface with small tubercles distally along apical half of gonopore; gonopore extending to midlength of shaft; anterior incision slightly less than half length of gonopore.

REMARKS. This species is closely related to *ilioneus* from the Philippines, Borneo and West Malaysia but has the apical process of the style less robust, the shaft of the aedeagus tapering to the apex in lateral aspect and the posterior tubercles fewer in number and more scattered.

MATERIAL EXAMINED

Holotype ♂, **Borneo**: Sabah, Tawau, Quoin Hill, Cocoa Research Station, 20.viii.1962 (*Y. Hirashima*) (BPBM, Type No. 12,546).

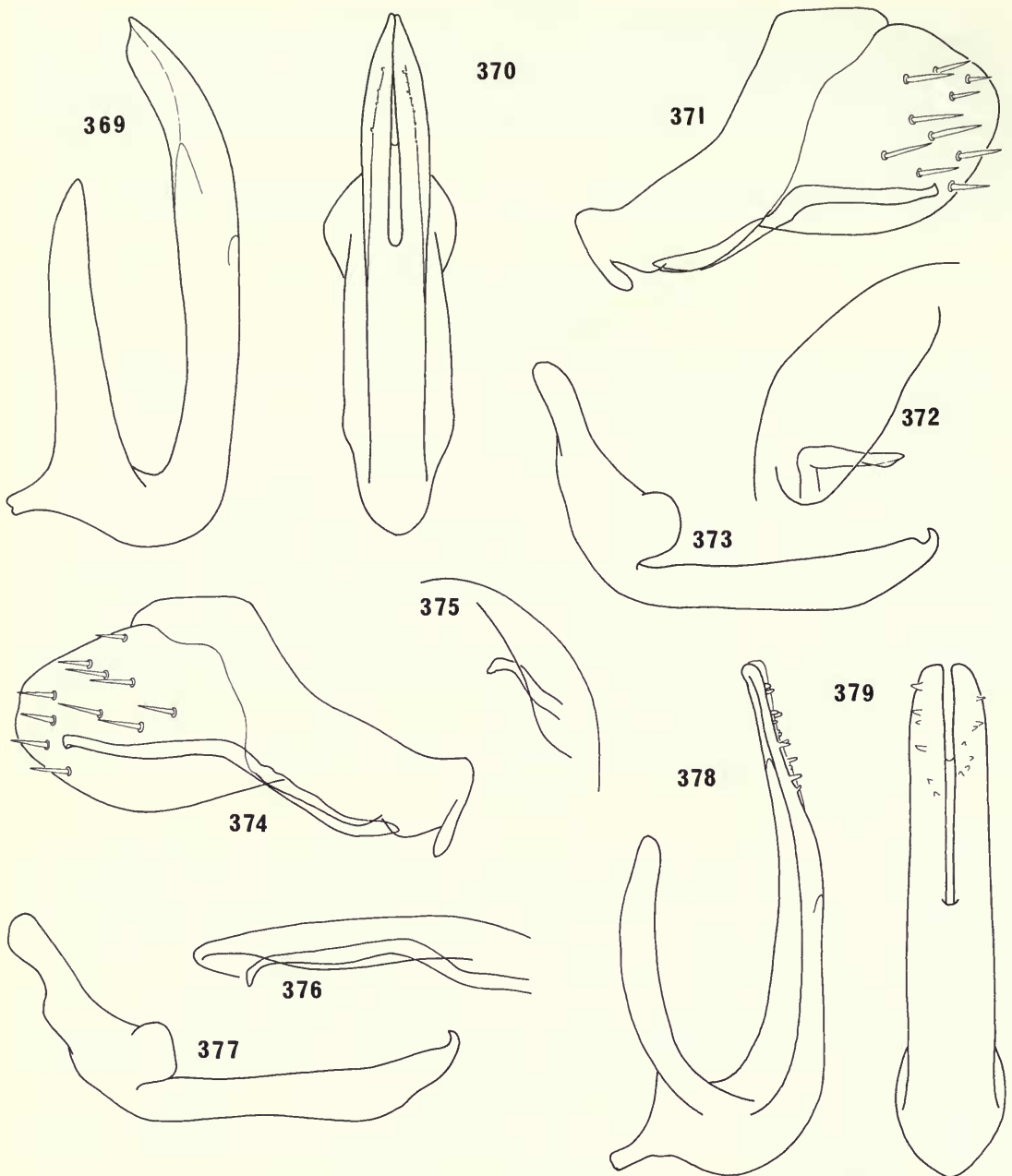
***Batracomorphus serranus* sp. n.**

(Figs 380–384)

Length: ♂, 4.72–5.12 mm (mean 4.83 mm).

Colour brown, forewings stramineous.

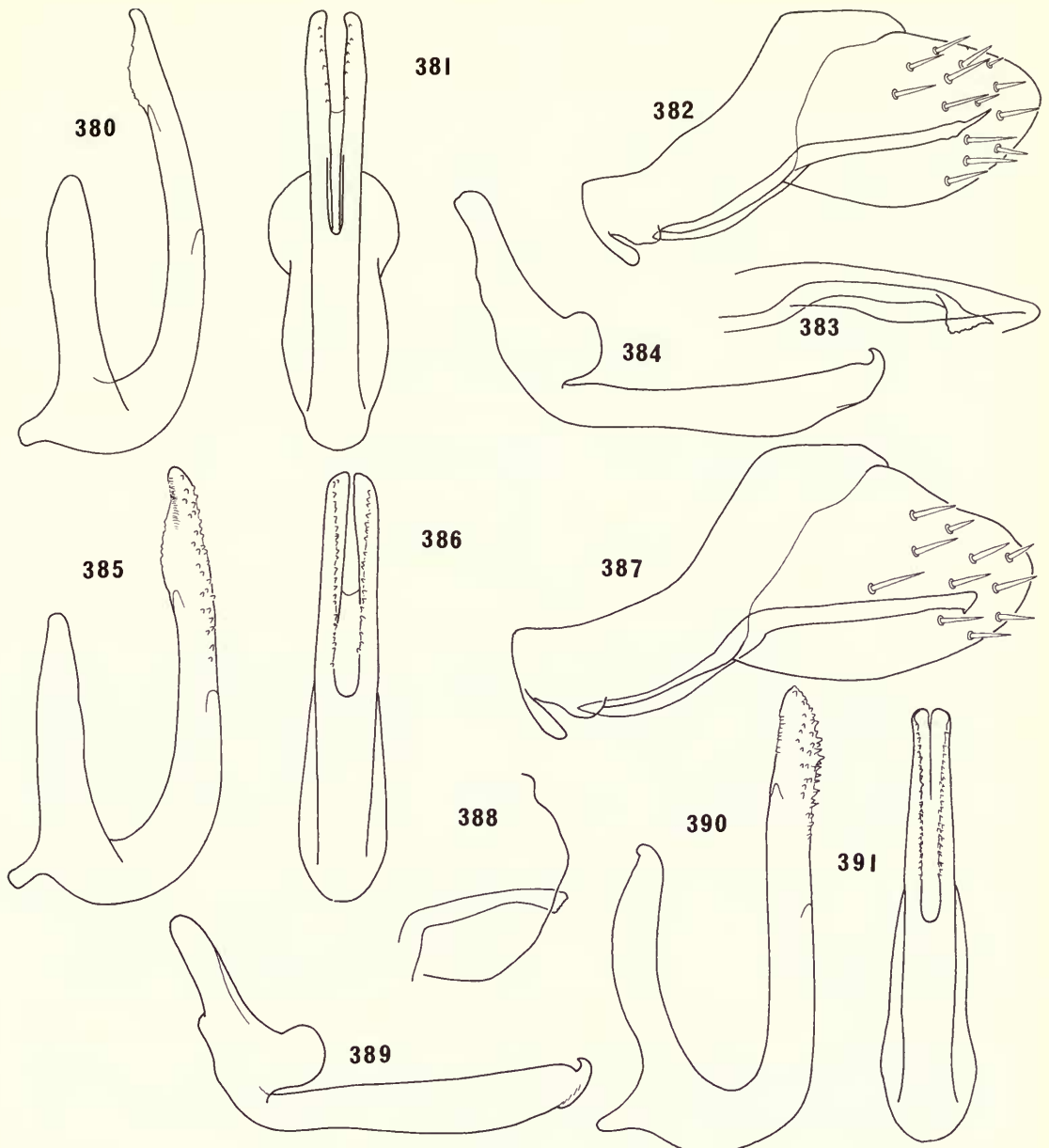
Male genitalia. Pygophore processes slender, straight, directed posteriorly or dorsoposteriorly, apex turned medially and lamellately expanded with its medial edge sometimes variously incised and rarely bifurcate. Styles with apical process expanded over distal half, tapering to short acute dorsally hooked apex. Aedeagus with shaft slender, elongate, directed dorsally; gonopore extending to midlength of shaft; anterior incision approximately one-third to one-half length of gonopore, its lateral margins sometimes



Figs 369–379 369–373, *Batracormorphus pandarus*. (369, 370) aedeagus; (371) pygophore; (372) left pygophore lobe and process, posterior view; (373) style. 374–379, *B. protesilaus*. (374) pygophore, right lateral view; (375) right pygophore lobe and process, posterior view; (376) same, ventral view; (377) style; (378, 379) aedeagus. (For further explanation see 'Techniques and methods'.)

turned anteriorly and protruding from shaft in lateral aspect; a few small tubercles along margins of gonopore over its distal half.

REMARKS. This species is closely related to *ilioneus* from the Philippines, Borneo and West Malaysia but differs in the shape of the pygophore processes, a much smaller number of



Figs 380–391 380–384, *Batracomorpha serranus*. (380, 381) aedeagus; (382) pygophore; (383) left pygophore lobe and process, ventral view; (384) style. 385–391, *B. ilioneus*. (385, 386) aedeagus, usual shape (Borneo); (387) pygophore; (388) left pygophore lobe and process, posterolateral view; (389) style; (390, 391) aedeagus (Philippines). (For further explanation see ‘Techniques and methods’.)

tubercles bordering the gonopore, and the absence of dark brown spots on the pronotum and forewings. It is known only from north-western Malaya.

MATERIAL EXAMINED

Holotype ♂, **West Malaysia**: Perak, Larut Hills, 1128 m, 12.ii.1932 (*H. M. Pendlebury*) (BMNH).

Paratypes. **West Malaysia**: 5 ♂, 1 ♀ (BMNH).

***Batracomorpha ilioneus* sp. n.**

(Figs 385–391)

Length: ♂, 4.32–5.20 mm (mean 4.69 mm).

Pronotum sometimes speckled with small variably sized dark brown spots; forewings mottled with small variably sized dark brown spots, sometimes faintly so, and also sometimes speckled with minute dark brown dots.

Male genitalia. Pygophore processes slender, straight, directed posteriorly, apex turned medially, spatulate, truncate, sometimes obliquely truncate and rarely acute. Styles with apical process slightly expanded over distal half, tapering to short acute dorsally hooked apex, sometimes slightly expanded keel-like subapically on ventral margin. Aedeagus with shaft slender, elongate, directed dorsally; gonopore extending to approximately midlength of shaft; anterior incision extending approximately one-third to two-thirds length of gonopore, its lateral margins usually turned anteriorly and protruding from shaft in lateral aspect; numerous small tubercles along lateral margins of gonopore to near its base.

REMARKS. A specimen from G. Kledang, Perak, West Malaysia, lacks tubercles alongside the gonopore. This species is closely related to *serranus* from West Malaysia but differs in the shape of the pygophore processes, the more numerous tubercles alongside the gonopore, and the presence of dark brown spots on the forewings and sometimes also on the pronotum.

MATERIAL EXAMINED

Holotype ♂, **Borneo**: Sarawak, Bau, Lake area, 30.viii.1958 (*T. C. Maa*) (BPBM, Type No. 12,547).

Paratypes. **Borneo**: 8 ♂, Sabah and Sarawak (BPBM). **Philippines**: 4 ♂, Balabac, Luzon and Palawan (FMNH, USNM, ZM). **West Malaysia**: 2 ♂ (BMNH).

Batracomorpha teucer sp. n.

(Figs 392–396)

Length: ♂, 4.24–4.80 mm (mean 4.47 mm).

Male genitalia. Pygophore processes slender, directed posteriorly to near midlength and then turned dorsoanteriorly, apex acute and turned ventrally, ventral margin denticulate subapically for approximately one-third length of process, the tooth at each end of series being considerably larger than others. Styles with apical process expanded over distal half, tapering to short acute dorsally hooked apex. Aedeagus with shaft slender, directed dorsoposteriorly at base and recurved anterodorsally near midlength, posterior margin expanded keel-like over distal half on each side of gonopore, lateral margins expanded keel-like over approximately distal one-fourth; gonopore extending to just before midlength of shaft; anterior incision extending approximately one-third length of shaft.

REMARKS. The present species is one of three closely related species (*teucer*, *harpalyce* and *ascanius*) which are characterised by the shape of the pygophore processes. It is much smaller than *harpalyce* from Borneo and differs also in the shape of the aedeagus and in having a less robust pygophore process. It differs from *ascanius*, which occurs in both the Philippines and Borneo, in the shape of the aedeagus and the absence of an enlarged ventral tooth on the pygophore process.

MATERIAL EXAMINED

Holotype ♂, **Borneo**: Sarawak, foot of Mt Dulit, junction of rivers Tinjar and Lejok, 27.viii.1932 (*B. M. Hobby & A. W. Moore*) (BMNH).

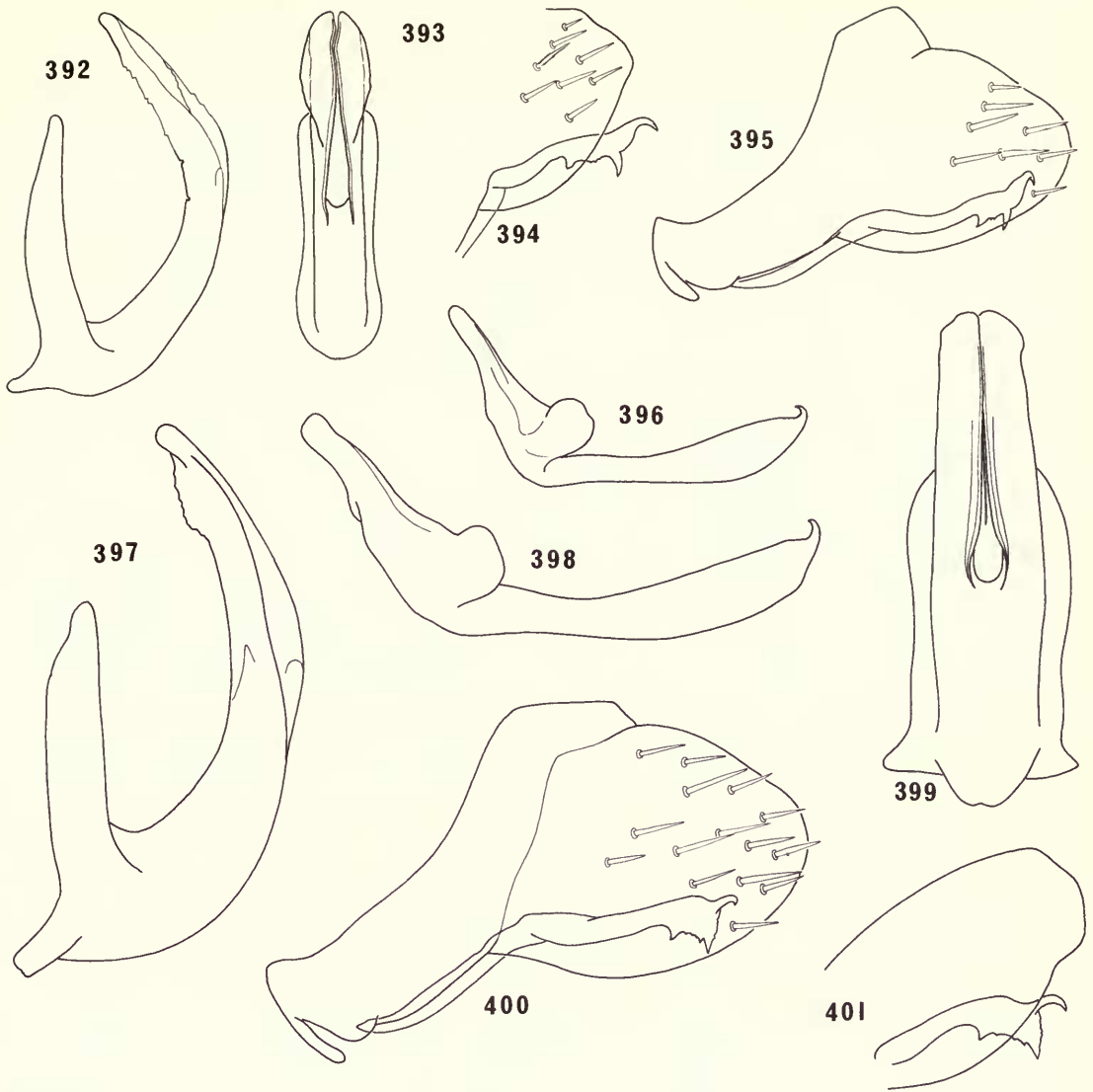
Paratypes. **Borneo**: 6 ♂, 3 ♀, Sabah and Sarawak (BMNH, BPBM). **Philippines**: 5 ♂, Luzon, Negros and Palawan (BPBM, ZM). **West Malaysia**: 3 ♂ (BMNH).

Batracomorpha harpalyce sp. n.

(Figs 397–401)

Length: ♂, 5.68–5.76 mm (mean 5.72 mm).

Male genitalia. Pygophore processes directed posteriorly to near midlength and then turned post-omesally, apex acute, finger-like, turned ventrally, ventral margin expanded plate-like over distal one-third with its ventral edge dentate, the tooth at each end of series being considerably larger than others. Styles with apical process expanded over distal half, tapering to short acute dorsally hooked apex. Aedeagus with shaft directed dorsally, recurved anterodorsally at midlength, tapering to apex in lateral aspect, broadly rounded apically in posterior aspect; gonopore extending to near midlength of shaft, spout-like with posterior margin projecting keel-like on each side to near apex; anterior incision



Figs 392–401 392–396, *Batracomorpha teucer*. (392, 393) aedeagus; (394) left pygophore lobe and process, posteroventral view; (395) pygophore; (396) style. 397–401, *B. harpalyce*. (397) aedeagus; (398) style; (399) aedeagus; (400) pygophore; (401) left pygophore lobe and process, posterolateral view. (For further explanation see 'Techniques and methods'.)

approximately same length as gonopore with anterior margin of shaft projecting keel-like on each side over its distal half.

REMARKS. This species is most closely related to *teucer* from the Philippines, Borneo and West Malaysia but is much larger and differs also in the shape of the aedeagus and in having a more robust pygophore process. (See additional remarks under *teucer*.)

MATERIAL EXAMINED

Holotype ♂, **Borneo**: Sarawak, Nanga Pelagus near Kapit, 180–585 m, 7–14.viii.1958 (*T. C. Maa*) (BPBM, Type No. 12,548).

Paratype. **Borneo**: 1 ♂, Sabah (BPBM).

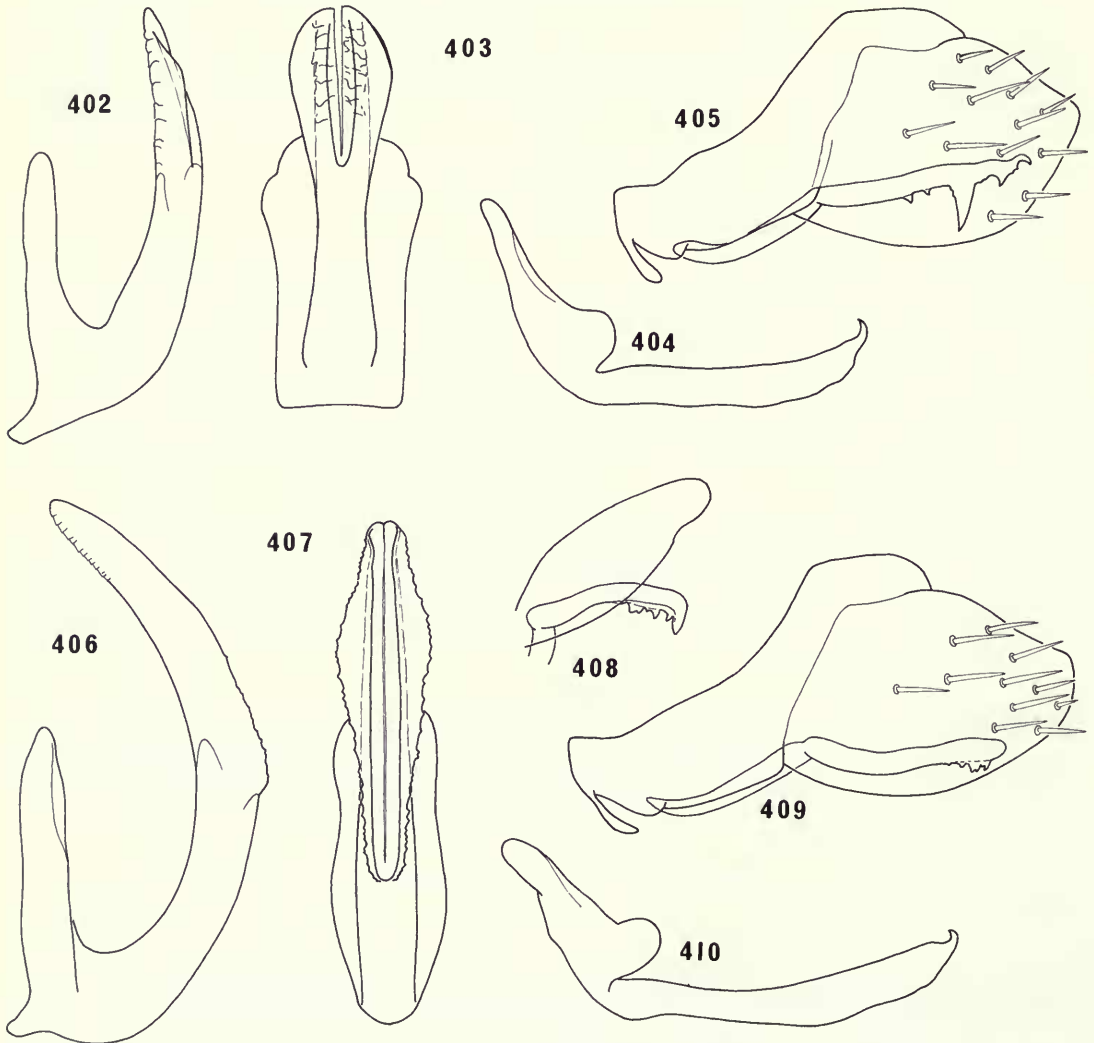
Batracomorpha ascanius sp. n.

(Figs 402–405)

Length: ♂, 4.16–4.64 mm (mean 4.36 mm).

Male genitalia. Pygophore processes directed posteriorly, apex acute, finger-like, turned ventrally, ventral margin with two dentate projections on distal half, the proximal one much larger than distal one, ventral margin sometimes with additional smaller dentition. Styles with apical process only slightly expanded over distal half, tapering to short acute dorsally hooked apex. Aedeagus with shaft directed dorsally, tapering to apex in lateral aspect, with lateral lamellate expansions over apical half; gonopore extending to near midlength of shaft; anterior incision approximately same length as gonopore.

REMARKS. This species is most closely related to *teucer* from Borneo, the Philippines and West Malaysia but differs in having a straight rather than recurved shaft to the aedeagus and in lacking keel-like extensions on the posterior margin. The styles in the present species are also of more



Figs 402–410 402–405, *Batracomorpha ascanius* (Philippine specimen). (402, 403) aedeagus; (404) style; (405) pygophore. 406–410, *B. erato*. (406, 407) aedeagus; (408) left pygophore lobe and process, posterolateral view; (409) pygophore; (410) style. (For further explanation see 'Techniques and methods'.)

uniform width and the pygophore processes have the proximal tooth on the ventral margin much larger than the distal one. (See additional remarks under *teucer*.)

MATERIAL EXAMINED

Holotype ♂, **Philippines**: Mindanao, Z. del Sur, 11 km NW. of Milbuk, 390 m, 5.viii.1958 (*H. E. Milliron*) (BPBM, Type No. 12,549).

Paratypes. **Borneo**: 53 ♂, Sabah (BPBM). **Philippines**: 4 ♂, 1 ♀, Mindanao and Palawan (BPBM, ZM).

***Batracomorphus erato* sp. n.**

(Figs 406–410)

Length: ♂, 4.24–4.48 mm (mean 4.34 mm).

Male genitalia. Pygophore processes slender, directed posteriorly, turned posteromesally or posterodorsally distad of midlength, apex acute and turned ventrally, ventral margin with a row of small irregular teeth over distal third. Styles with apical process elongate, slightly expanded over distal half, tapering to short acute dorsally hooked apex. Aedeagus simple; shaft elongate, directed dorsally and recurved anteriorly over distal half; gonopore extending to just basad of midlength of shaft, its lateral margins expanded flange-like and divergent with edges serrate; anterior incision slightly shorter than gonopore.

REMARKS. This species is similar to *teucer* from Borneo, Philippines and West Malaysia but differs in having a more robust and less ornate pygophore process, a more elongate and less expanded style and in the shape of the aedeagus. It also resembles *peteos* from Borneo but has a more recurved aedeagus with a longer anterior incision, a more elongate and less expanded style, and the ventral margin of the pygophore processes dentate apically.

MATERIAL EXAMINED

Holotype ♂, **Philippines**: Luzon, Zambales Province (*Baker*) (USNM).

Paratypes. **Philippines**: 2 ♂, Mindanao and Palawan (FMNH, ZM).

***Batracomorphus dolon* sp. n.**

(Figs 411–416)

Length: ♂, 4.24–4.48 mm (mean 4.36 mm).

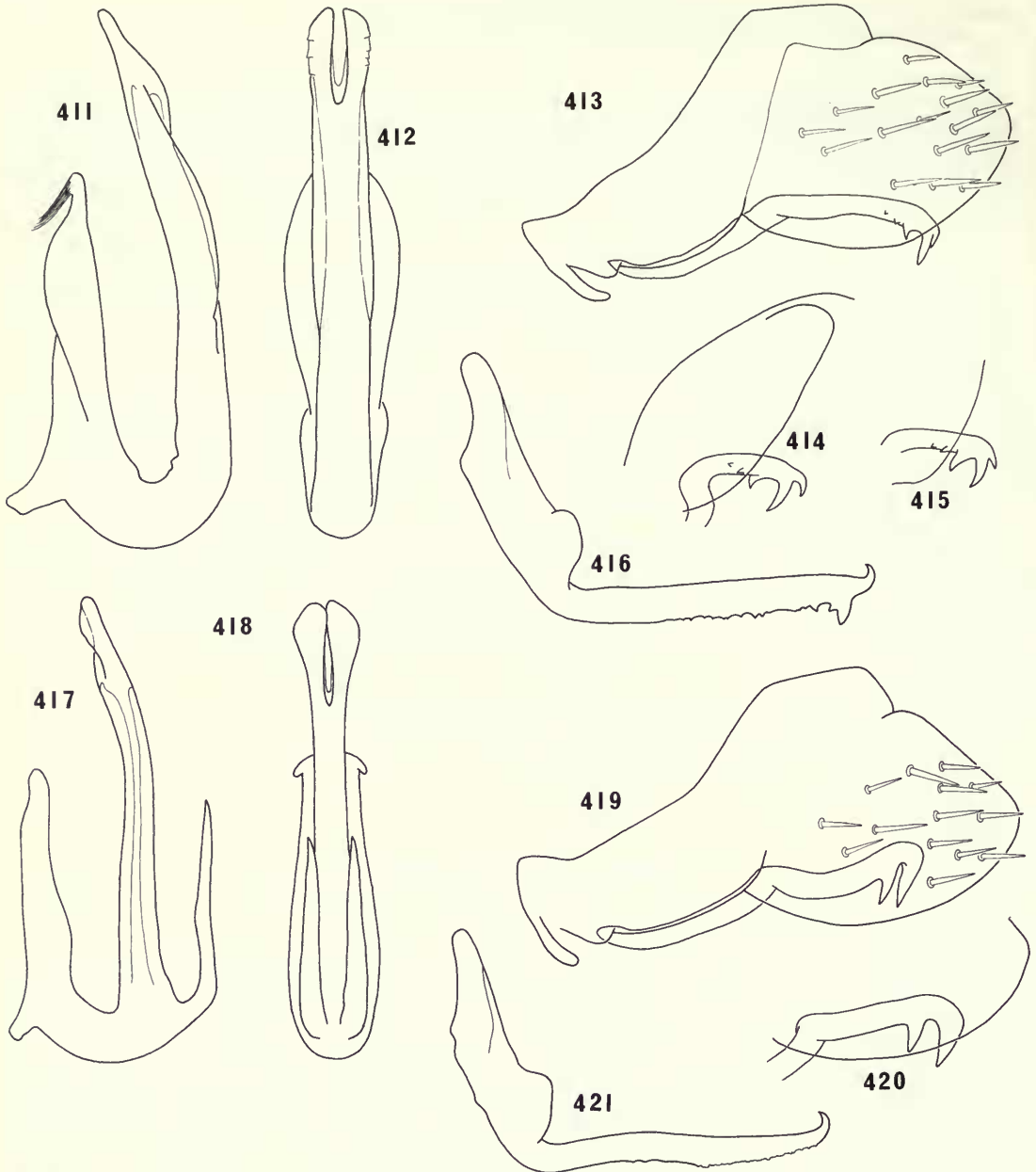
Male genitalia. Pygophore processes slender, directed posteriorly over basal half, then mesoposteriorly, apex acute, turned ventrally, a series of variably sized ventrally directed teeth along ventral edge of distal third. Styles with apical process elongate, slender, of uniform width, terminating in short acute dorsally hooked apex; ventral margin acuminate and serrate over distal half with a large ventrally directed tooth subapically. Aedeagus with shaft slender, directed dorsally and turned slightly anterodorsally at midlength, tapering to apex in lateral aspect; posterolateral margins expanded keel-like to near apex; posterior margin produced keel-like on each side of gonopore near apex; gonopore short; anterior incision slightly shorter than gonopore.

REMARKS. This species resembles *erato* from the Philippines in the general shape of the pygophore processes but differs in having the teeth relatively longer. It also differs in having the shaft of the aedeagus less curved, the gonopore and anterior incision much shorter, and the apical process of the style of uniform width and with the ventral margin serrate. It resembles *ityes* from Sumatra, Philippines and West Malaysia in having only a short gonopore and anterior incision but differs in other aspects of the aedeagus as well as in the shape of the pygophore processes and styles.

MATERIAL EXAMINED

Holotype ♂, **Borneo**: Sabah, Tawau, Quoin Hill, Cocoa Research Station, 6.ix.1962 (*Y. Hirashima*) (BPBM, Type No. 12,550).

Paratype. **Borneo**: 1 ♂, same data as holotype.



Figs 411–421 411–416, *Batracormorphus dolon*. (411, 412) aedeagus; (413) pygophore; (414) left pygophore lobe and process, posterolateral view; (415) same, different specimen; (416) style. 417–421, *B. ammon*. (417, 418) aedeagus; (419) pygophore; (420) left pygophore lobe and process, posterolateral view; (421) style. (For further explanation see ‘Techniques and methods’.)

***Batracormorphus ammon* sp. n.**

(Figs 417–421)

Length: ♂, 3.92–4.40 mm (mean 4.14 mm).

Male genitalia. Pygophore processes robust, directed dorsoposteriorly and curving medially, apex acute, turned ventrally, a short robust ventrally directed subapical spur on ventral margin. Styles with

apical process slender, elongate, of approximately uniform width throughout length, tapering to short acute dorsally hooked apex, ventral margin mildly serrate over distal half. Aedeagus with shaft slender, directed dorsally and turned slightly anterodorsally distad of midlength, terminating in a pair of small lateral lobe-like expansions; a pair of slender dorsally directed processes basally, posterior to shaft, extending to near midlength of latter; gonopore and anterior incision relatively short, extending over apical one-fifth of shaft.

REMARKS. This species is unique amongst those of this area in having basal processes on the aedeagus. It is mostly closely related to *dolon* from Borneo in the shape of the styles and pygophore processes and in having only a short gonopore and anterior incision on the aedeagus. It differs from *dolon*, however, in the specific shape of the style and pygophore process as well as the presence of the basal processes on the aedeagus.

MATERIAL EXAMINED

Holotype ♂, **Borneo:** Sarawak, foot of Mt Dulit, junction of rivers Tinjar and Lejok, 1.ix.1932 (*B. M. Hobby & A. W. Moore*) (BMNH).

Paratypes. **Borneo:** 9 ♂, Sabah and Sarawak (BMNH, BPBM).

***Batracomorphus troilus* sp. n.**

(Figs 422–426)

Length: ♂, 4.88 mm.

Male genitalia. Pygophore processes slender, directed dorsoposteriorly, apical third abruptly angled more dorsally and slightly enlarged with row of variably sized teeth along ventrolateral margin, terminating apically in recurved anteromesally directed tooth. Styles with apical process of uniform width over basal two-thirds, distal third constricted to just before apex, abruptly tapered distally to short acute dorsally hooked apex. Aedeagus with shaft slender, directed dorsally; posterior margin produced as posteriorly directed keels on each side of midline over distal two-fifths; gonopore extending approximately one-fifth length of shaft; anterolateral margins of shaft produced subapically as laterally directed keel-like lobes on each side of short anterior incision.

REMARKS. This species is similar to *dolon* from Borneo in having a relatively short gonopore and anterior incision, and posterior keels on the shaft but differs in having the posterior keels extending to near the midlength of the shaft, as in *teucer* which, however, has a much longer gonopore. It also resembles *dolon* and *teucer* in having teeth at the distal end of the pygophore processes but differs in their direction and distribution, as well as in the shape of the styles.

MATERIAL EXAMINED

Holotype ♂, **Borneo:** Sabah, Tenompok, 10–14.ii.1959 (*T. C. Maa*) (BPBM, Type No. 12,551).

***Batracomorphus rorida* (Linnavuori) comb. n.**

(Figs 427–431)

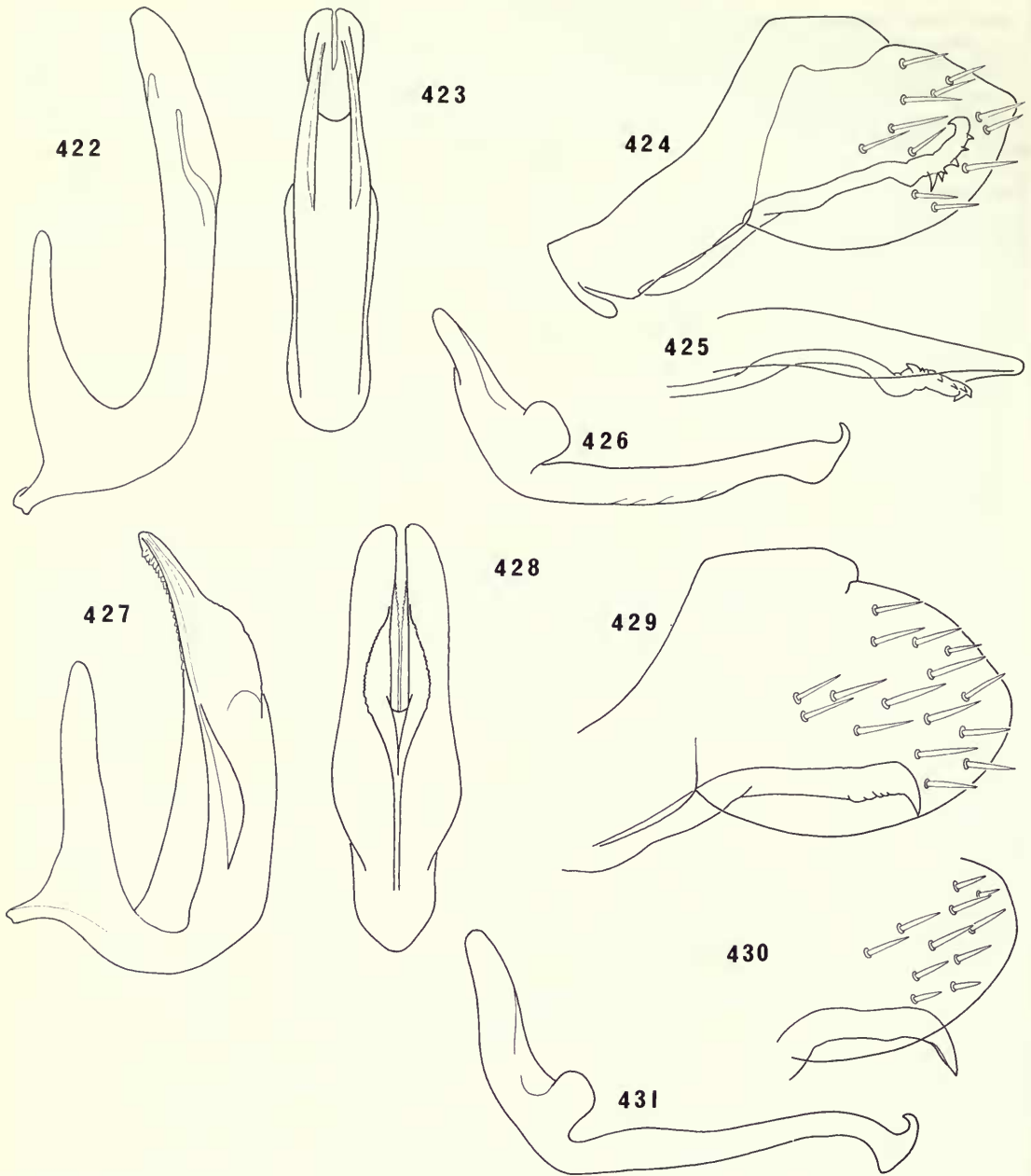
Stragania rorida Linnavuori, 1956: 181. Holotype ♂, SUMATRA (NR) [examined].

Length: ♂, 4.96–5.04 mm (mean 5.00 mm).

Forewings with numerous small dark brown tubercles.

Male genitalia. Pygophore processes robust, directed posteriorly, apex acute, turned ventromesally. Styles with apical process slender, elongate, widest basally and then uniform in width to near apex, turned ventrad distally and terminating in short acute dorsally hooked apex, ventral margin with triangular expansion subapically. Aedeagus with shaft robust, directed dorsally, narrowing to apex in lateral aspect, broadly rounded apically in posterior aspect, lateral margins expanded keel-like with basal half of keels turned posteriorly, anterior margin acute, posterior margin expanded keel-like medially over basal half to base of gonopore, lateral margins of gonopore keel-like divergent to just basad of shaft apex; gonopore and anterior incision extending approximately two-fifths length of shaft.

REMARKS. This species is one of several having keel-like expansions on the shaft of the aedeagus but differs from them all in the shape of the aedeagus, as well as the shape of the pygophore processes and styles. It is most similar to *erato* from the Philippines in having the lateral margins of the gonopore expanded and divergent and to *troilus* from Borneo in the shape of the styles.



Figs 422–431 422–426, *Batracomorphus troilus*. (422, 423) aedeagus; (424) pygophore; (425) left pygophore lobe and process, ventral view; (426) style. 427–431, *B. rorida* (Borneo specimen). (427, 428) aedeagus; (429) pygophore; (430) left pygophore lobe and process, posterolateral view; (431) style. (For further explanation see 'Techniques and methods'.)

DISTRIBUTION. Borneo*, Sumatra (* new record).

MATERIAL EXAMINED

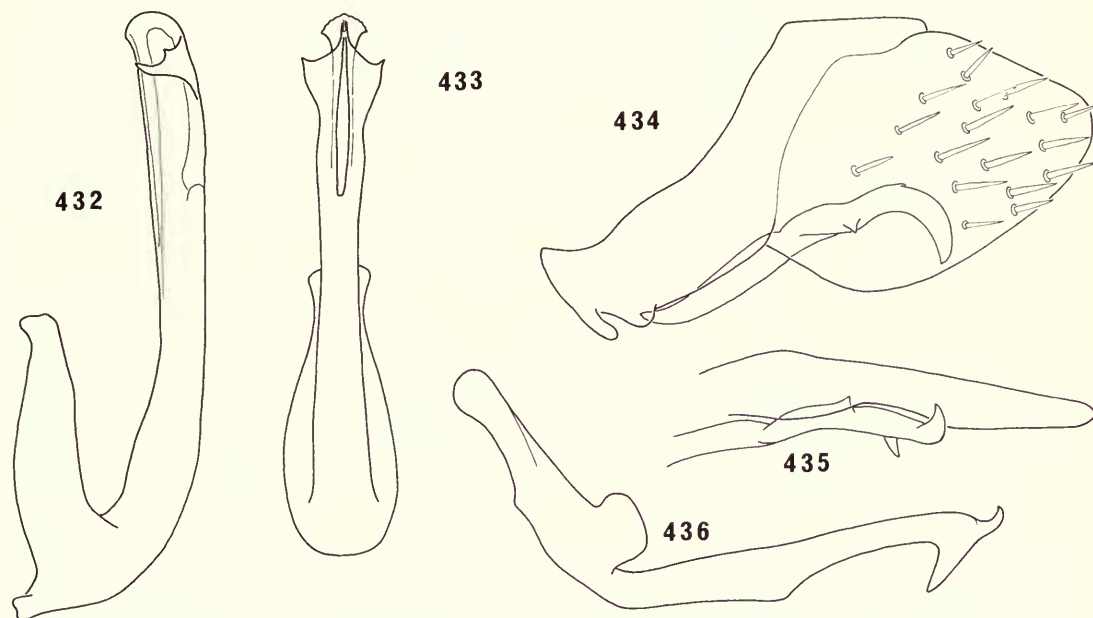
Stragania rorida Linnavuori, holotype ♂, **Sumatra**: Medan (*Mjöberg*) (NR).
Borneo: 25 ♂, Sabah and Sarawak (BMNH, BPBM).

***Batracomorphus otus* sp. n.**

(Figs 432–436)

Length: ♂, 4.88 mm.

Male genitalia. Pygophore processes robust, directed posteriorly to midlength then curving ventrally, apex acute and turned laterally, a short spur on lateral margin near base and another on medial margin at midlength. Styles with apical process elongate, expanding gradually to near midlength then abruptly narrowed to slender distal half, terminating in acute dorsally hooked apex, a large triangular projection subapically on ventral margin. Aedeagus with shaft slender, elongate, directed dorsally, apex rounded in lateral aspect; a pair of triangular lamellate expansions subapically on posterior margin, curving anteriorly; anterior margin expanded at apex into pair of small divergent lamellate lobes; gonopore extending approximately one-third length of shaft; anterior incision very short.



Figs 432–436 *Batracomorphus otus*. 432, 433, aedeagus; 434, pygophore; 435, left pygophore lobe and process, ventral view; 436, style. (For further explanation see 'Techniques and methods'.)

REMARKS. This species is one of a group of three (*otus*, *melampus* and *hector*) from West Malaysia, characterised by the general shape of the style, the short or obsolete anterior incision and lamellate outgrowths on the aedeagus, and the general shape of the pygophore processes. All three differ from each other by the detailed characters of their male genitalia, with *hector* being further distinguished by the presence of numerous dark brown tubercles on the forewings.

MATERIAL EXAMINED

Holotype ♂, West Malaysia: Pahang, Fraser's Hill, 1281 m, 4.vii.1931 (*H. M. Pendlebury*) (BMNH).

***Batracomorphus melampus* sp. n.**

(Figs 437–441)

Length: ♂, 5.28 mm.

Male genitalia. Pygophore processes directed dorsoposteriorly, slightly expanded just prior to apex with latter acute and turned ventrally, a row of small lamellate teeth on ventrolateral margin over distal third. Styles with apical process expanding to just distad of midlength then abruptly narrowed; a large lamellate triangular expansion on ventral margin immediately distad of constriction and extending to short acute dorsally hooked apex. Aedeagus with shaft slender, elongate, directed dorsally and curving anterodorsally distally; anterolateral edges produced laterally as lamellate expansions over distal half of shaft; postero-

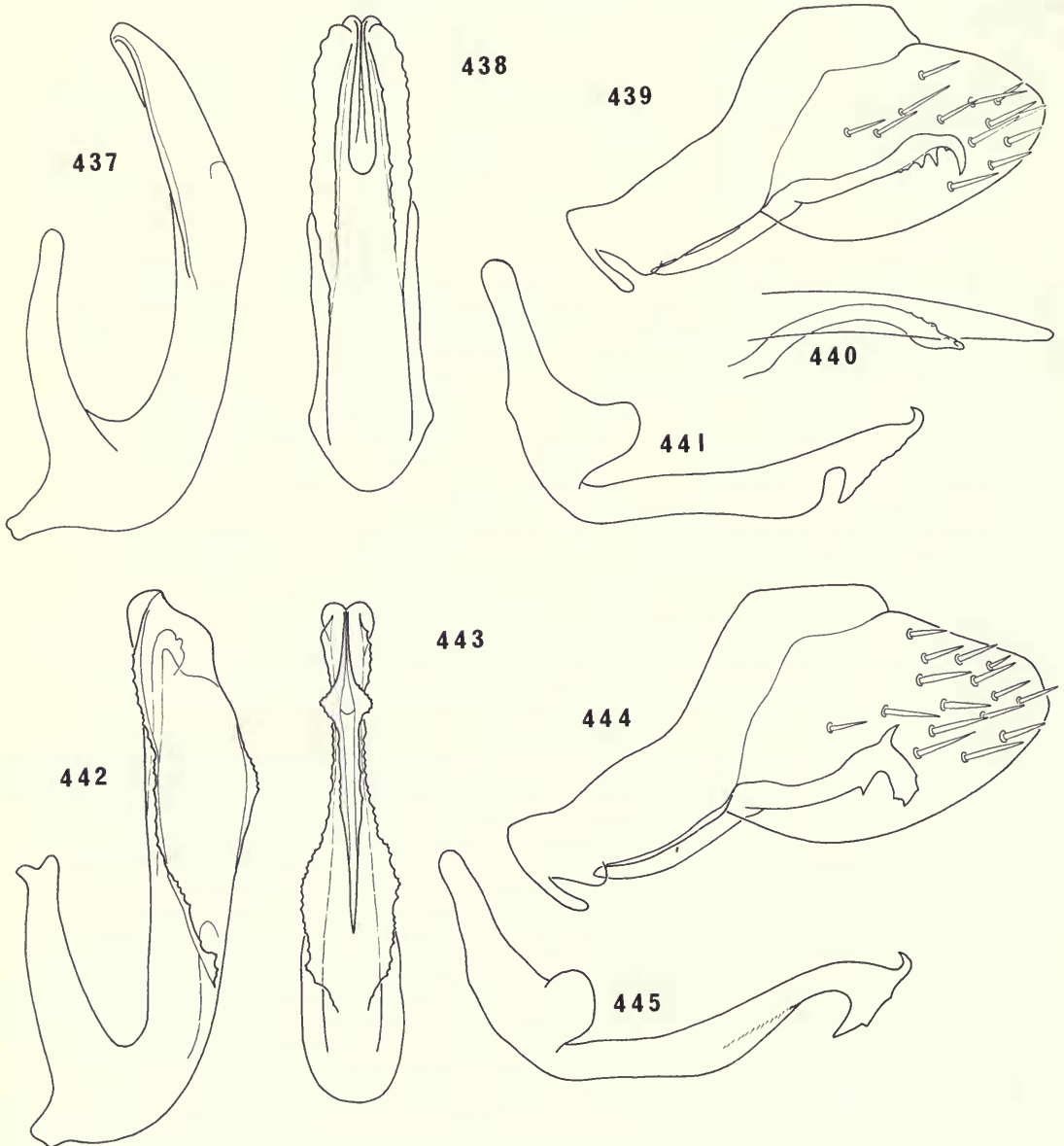
lateral edges of shaft acuminate; gonopore extending approximately one-third length of shaft; anterior incision extending approximately half length of gonopore.

REMARKS. See remarks under *otus*. This species is known only from north-western Malaya.

MATERIAL EXAMINED

Holotype ♂, West Malaysia: Pahang, Cameron Highlands, J.R., 1433 m, 16.v.1939 (*H. M. Pendlebury*) (BMNH).

Paratype. West Malaysia: 1 ♂ (BMNH).



Figs 437-445 437-441, *Batracomorphus melampus*. (437, 438) aedeagus; (439) pygophore; (440) left pygophore lobe and process, ventral view; (441) style. 442-445, *B. hector*. (442, 443) aedeagus; (444) pygophore; (445) style. (For further explanation see 'Techniques and methods'.)

***Batracomorpha hector* sp. n.**

(Figs 442–445)

Length: ♂, 4.88 mm.

Forewings with numerous minute dark brown tubercles.

Male genitalia. Pygophore processes short, robust, directed posteriorly, distal half arched dorsally with apex spatulate, directed ventrally, rounded in lateral aspect and slightly serrate, a small lamellate spine on ventral margin approximately one-third distance from apex and a spur on dorsal margin at apex of arch. Styles with apical process increasing in width to midlength then tapering to short acute dorsally hooked apex; a robust ventrally directed triangular expansion subapically on ventral margin, its posterior edge slightly serrate. Aedeagus with shaft directed dorsally, becoming robust and laterally compressed over distal half; a marginally serrate lamellate expansion laterally over midlength region of shaft arising near posterolateral margin basally and extending diagonally to anterolateral margin and continuing as serrate crest to apex; posterior margin expanded flange-like on each side of midline to level of gonopore where produced as pair of triangular lamellate divergent expansions; gonopore short, extending approximately one-sixth length of shaft; anterior incision absent.

REMARKS. See remarks under *otus*.

MATERIAL EXAMINED

Holotype ♂, West Malaysia: Perak, Gunong Kledang, 808 m, 15.xi.1927 (*E. Seimund*) (BMNH).***Batracomorpha cronos* sp. n.**

(Figs 446–455)

Length: ♂, 5.60–5.92 mm (mean 5.69 mm).

Male genitalia. Pygophore processes filamentous, directed posteriorly, with or without one or more small subapical spurs on ventral margin. Styles with apical process slightly expanded over distal half, tapering to short acute dorsally hooked apex. Aedeagus simple; shaft directed dorsally, turned slightly anterodorsally at midlength, a slight subapical constriction from posterior margin usually present, sometimes indistinct; gonopore and anterior incision of approximately equal length, extending to just basad of midlength of shaft.

REMARKS. The variability in the ornamentation of the pygophore processes occurs within populations and sometimes between the left and right side of the body. The pygophore processes, in the absence of subapical spurs, resemble those in *cocles*, *hebrus* and *calliope* but the present species differs from all three in the shape of the aedeagus and styles, as well as being larger. It is most closely related to *acrisius* from New Caledonia but is much larger and lacks a subapical keel on the pygophore processes.

MATERIAL EXAMINED

Holotype ♂, New Hebrides: Aneityum, Red Crest, 366 m, 4.8 km NE. of Anelgauhat, vi.1955 (*L. E. Cheesman*) (BMNH).

Paratypes. New Hebrides: 22 ♂, 9 ♀, Aneityum and Erromanga (BMNH, SAM).

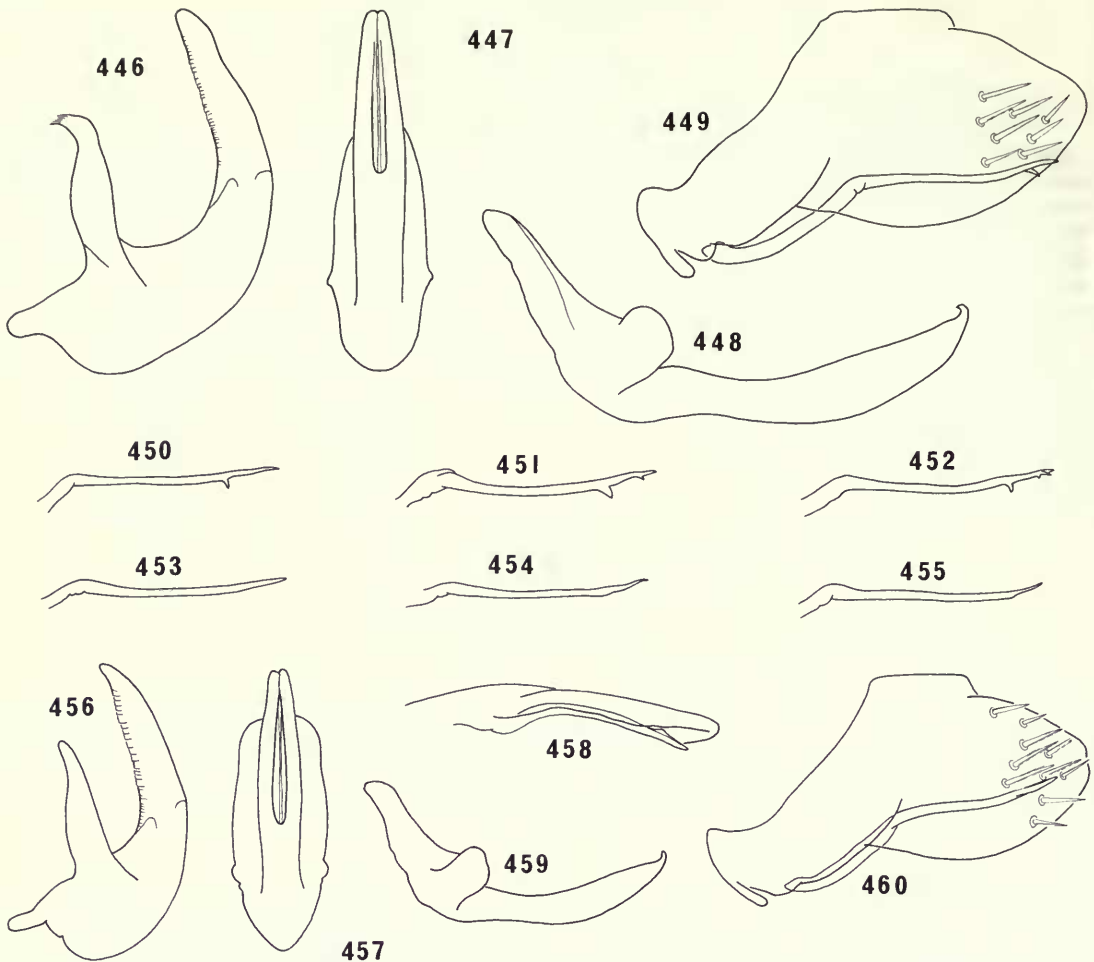
***Batracomorpha acrisius* sp. n.**

(Figs 456–460)

Length: ♂, 3.60–3.76 mm (mean 3.68 mm).

Male genitalia. Pygophore processes slender, directed posteriorly, apex acute, lateral margin slightly keel-like subapically. Styles with apical process slightly expanded over distal half, tapering to short acute dorsally hooked apex. Aedeagus simple; shaft directed dorsally, turned slightly anterodorsally over distal half; gonopore extending approximately two-thirds length of shaft; anterior incision extending slightly more basad than gonopore.

REMARKS. This species is similar to *hebrus* from New Caledonia, *sarpedon* from Australia and *cronos* from New Hebrides in the general shape of the pygophore processes but differs from all three in having a subapical keel on the process. It is also much smaller than these other species and, in addition, lacks the dark brown spots on the forewings present in the Australian species. It



Figs 446–460 446–455, *Batracomorphus cronos*. (446, 447) aedeagus; (448) style; (449) pygophore; (450–455) left pygophore process, left lateral views. 456–460, *B. acrisius*. (456, 457) aedeagus; (458) left pygophore lobe and process, ventral view; (459) style; (460) pygophore. (For further explanation see 'Techniques and methods'.)

differs further from *sarpedon* in the shape of the style, from *cronos* in the shape of the aedeagus, and from *hebrus* in the shape of both these structures.

MATERIAL EXAMINED

Holotype ♂, **New Caledonia**: Noumea, 0–50 m, 7.ii.1971 (*N. L. H. Krauss*) (USNM).

Paratypes. **New Caledonia**: 1 ♂, 4 ♀, same data as holotype.

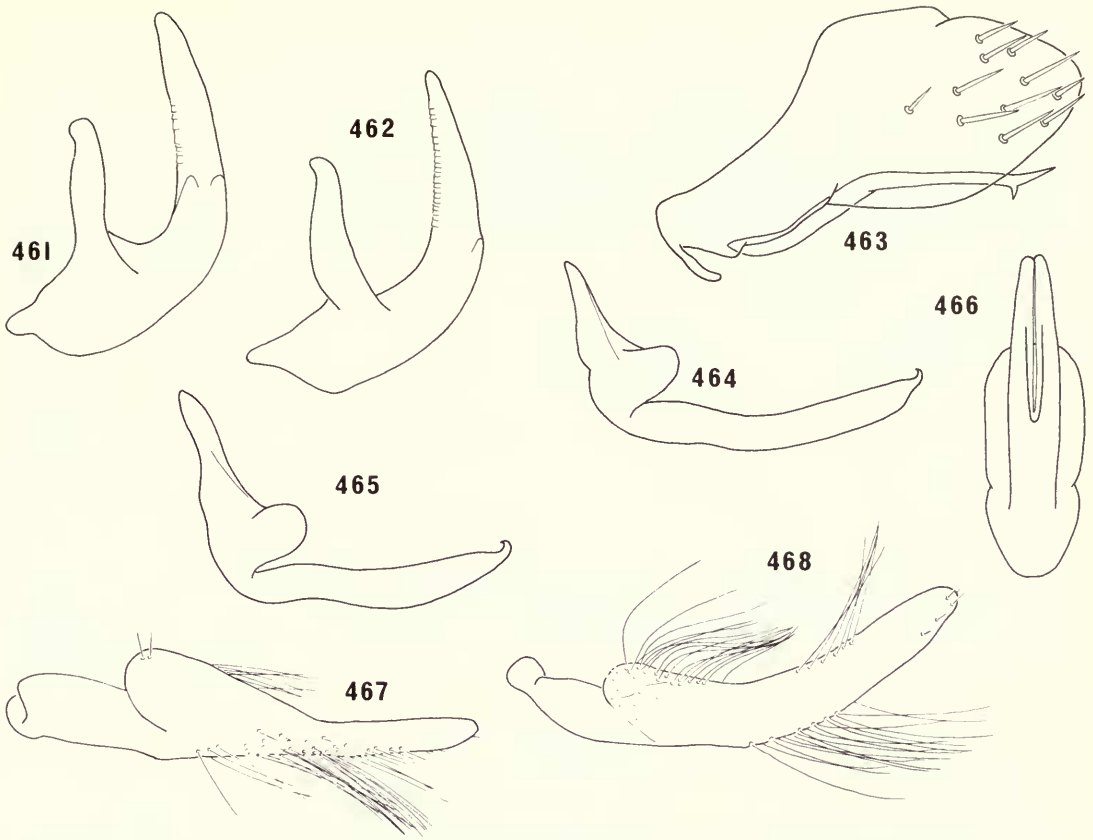
Batracomorphus harpago Linnavuori

(Figs 461–492)

Batracomorphus harpago Linnavuori, 1960a: 240. Holotype ♂, KUSAIE (USNM) [examined].

Length: ♂, 4.00–4.64 mm (mean 4.36 mm).

Male genitalia. Pygophore processes slender, directed posteriorly, apex acute and usually slightly upturned, rarely directed posteriorly, a small subapical spur on ventral margin, the portion of the process distad of spur usually longer than spur, rarely equal to or less than. Subgenital plates semi-membranous, elongate, with stem and lateral lobe basally; a group of long hair-like setae on dorsolateral margin of lobe; a



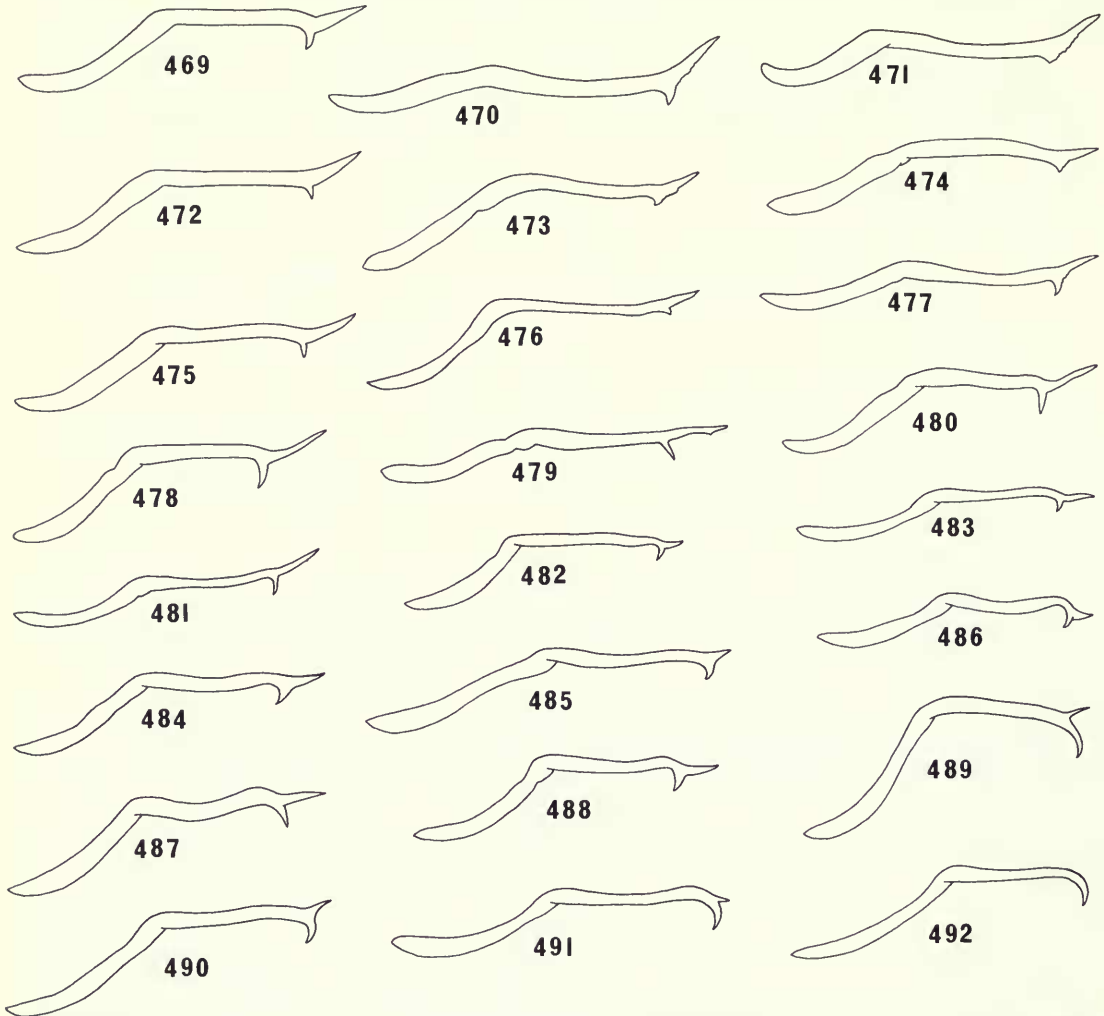
Figs 461–468 *Batracomorphus harpago*. 461, aedeagus Type B (Aneityum, New Hebrides); 462, aedeagus Type A (Guadalcanal, Solomon Islands); 463, pygophore Type A (Aneityum); 464, style Type B (Aneityum); 465, style Type A (Guadalcanal); 466, aedeagus; 467, left subgenital plate, ventral view; 468, same, left lateral view. (For further explanation see 'Techniques and methods' and text.)

short uniseriate row of long hair-like setae on dorsolateral margin near midlength; a multiseriate row of long hair-like setae on ventral margin near midlength, extending also over medial surface of plate. Styles with apical process usually slightly expanded over distal half, tapering to short acute dorsally hooked apex, rarely with apical process of uniform width and tapering abruptly subapically. Aedeagus simple; shaft directed dorsally, usually tapering to apex from near midlength in lateral aspect, rarely of uniform width in lateral aspect; gonopore extending to just basad of midlength of shaft; anterior incision equal in length to gonopore.

REMARKS. The most common form of the aedeagus (type A), in which the shaft is tapered towards the apex, occurs in 71 per cent of the 196 specimens examined and is distributed throughout the range except for New Ireland and Kusaie in the north and Erromanga, Tanna and Aneityum at the southern extremity. The remaining 29 per cent, in which the shaft of the aedeagus is of approximately uniform width (type B), is distributed throughout the entire range, from Kusaie to Aneityum. In the case of the styles, the most common form (73 per cent) has the apical process slightly expanded over its distal half and tapered gradually to the apex (type A). This form occurs throughout the range of the species except for Kusaie in the north and Efate, Erromanga, Tanna and Aneityum in the south. The other form of the style (type B), in which the apical process is of uniform width, occurs in the remaining 27 per cent of the specimens examined and is distributed throughout the entire range, from Kusaie to Aneityum. The two forms of the aedeagus are associated with those of the styles in all four possible combinations, the most common (65 per cent) being aedeagus type A with style type A which occurs from New

Britain to Malekula. The next most common combination (20 per cent) is aedeagus type B with style type B which occurs throughout the entire range from Kusaie to Aneityum. Of the other two possible combinations, aedeagus type A with style type B (7 per cent) occurs from Fauro to Efate and aedeagus type B with style type A (8 per cent) occurs from New Ireland to San Cristoval. There is no correlation between the two forms of aedeagus and style, or their various combinations, and the variability of the pygophore processes, representatives from the full range of the latter occurring with each of the aedeagus/style combinations.

The variability in the shape of the pygophore processes, which sometimes occurs in the same population, is shown in Figs 463 and 469–492. The usual form, in which the portion distad of the



Figs 469–492 *Batracomorpha harpago*, left pygophore process, left lateral view. 469, Type B, Malekula, New Hebrides; 470, Type I, Espiritu Santo, New Hebrides; 471, Type J, Aneityum, New Hebrides; 472, Type C, Malekula; 473, Type K, Aneityum; 474, Type L, Aneityum; 475, Type D, Malekula; 476, Type M, Santa Ysabel, Solomon Islands; 477, Type N, New Ireland; 478, Type E, Malekula; 479, Type G, Tanna, New Hebrides; 480, Type H, Erromanga, New Hebrides; 481, Type F, Rennell Island; 482, Type O, San Cristoval, Solomon Islands; 483, Type P, Guadalcanal, Solomon Islands; 484, Type Q, Santa Ysabel; 485, Type R, Santa Ysabel; 486, Type S, Florida Group, Solomon Islands; 487, Type T, Malaita, Solomon Islands; 488, Type U, Santa Ysabel; 489, Type V, Santa Ysabel; 490, Type W, Nggela Island, Florida Group; 491, Type X, Gizo Island, New Georgia Group, Solomon Islands; 492, Type Y, Gizo Island. (For further explanation see text.)

spur is longer than the spur itself, occurs in 68 per cent of the specimens examined, the most common of these being type D which occurs in 26 per cent of specimens. The closely similar forms (types A–J) occur in 62 per cent of specimens. All forms of the pygophore process occur throughout the full range of the species with the exception that those in which the portion of the process distad of the spur is equal to or less than the spur itself (types O–Y), are confined to the Solomon Islands and although occasionally found in New Britain do not occur in the New Hebrides. There is no correlation between the form of the pygophore process and the shape of the aedeagus and styles, all combinations of the latter occurring with the different types of process.

The great variability in this species appears to be a result of its distribution along the two island chains of the Solomons and New Hebrides and its consequent fragmentation into distinct populations. The greater variability of the pygophore processes in the Solomon Islands suggests that the species has occurred there for a far longer period than in the New Hebrides.

DISTRIBUTION. Kusaie, New Britain*, New Hebrides*, New Ireland*, Solomon Islands* (* new records).

MATERIAL EXAMINED

Batrachomorphus harpago Linnavuori, holotype ♂, **Kusaie:** Mt Matante, 380 m, 23.iv.1953 (*J. F. G. Clarke*) (USNM).

New Britain: 6 ♂, 4 ♀ (BPBM). **New Hebrides:** 46 ♂, 19 ♀, Aneityum, Efate, Erromanga, Espiritu Santo, Malekula and Tanna (BMNH, BPBM, SAM, USNM). **New Ireland:** 3 ♂, 1 ♀ (BMNH, ZM). **Solomon Islands:** 200 ♂, 96 ♀, Big Nggela, Bougainville, Buka, Choiseul, Fauro, Guadalcanal, Kolombangara, Malaita, Nggela, Rennell, San Cristoval, Santa Ysabel, Small Nggela and Vella Lavella (BMNH, BPBM, USNM).

***Batrachomorphus juno* sp. n.**

(Figs 493–503)

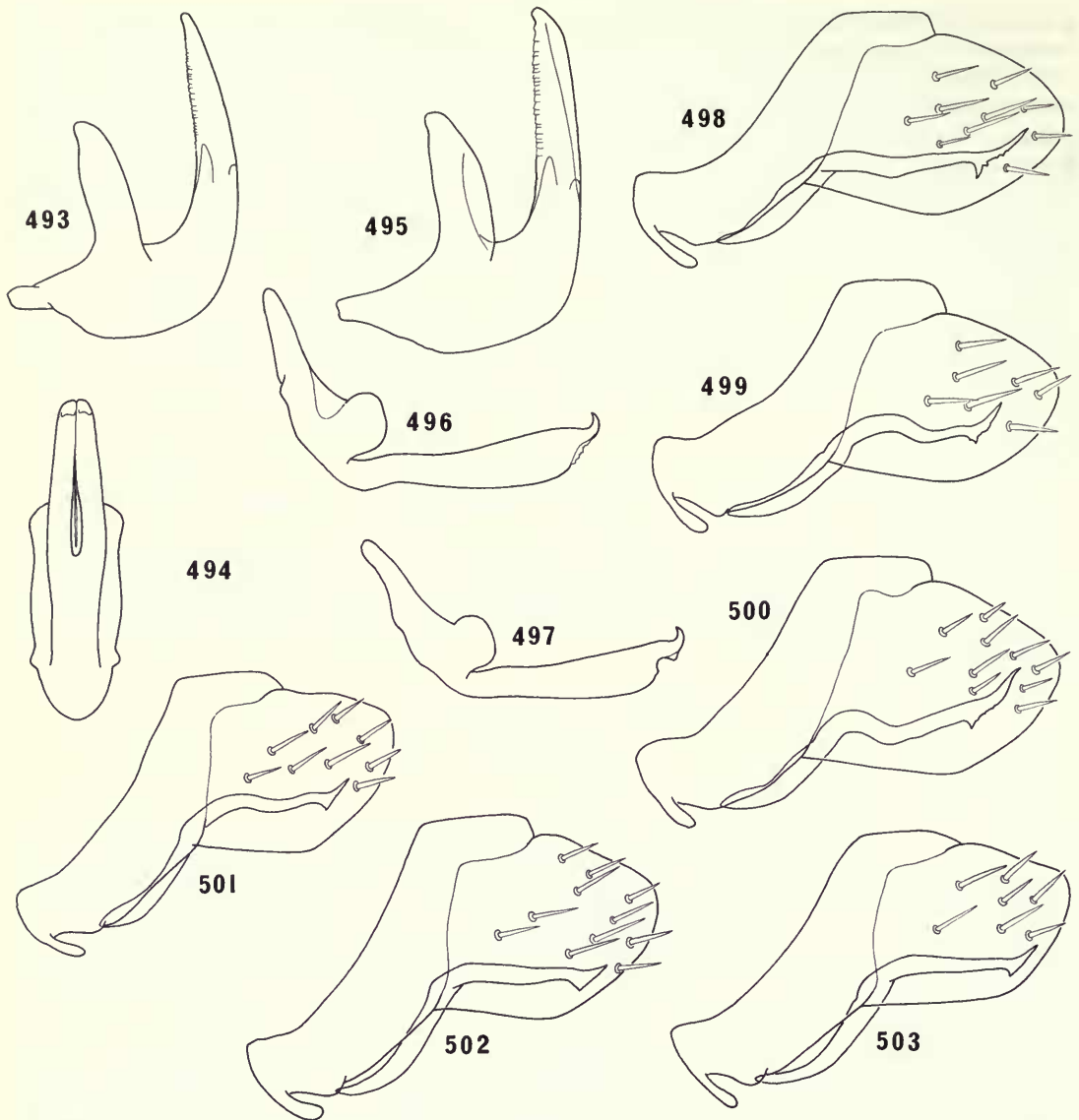
Length: ♂, 3.92–4.56 mm (mean 4.13 mm).

Male genitalia. Pygophore processes slender, directed posteriorly, straight or slightly sinuate, apex acute, turned posterodorsally, ventral margin acutely ridged subapically, sometimes slightly serrate, the more basad part sometimes produced spur-like, variable in relative length of process distad of spur. Styles with apical process increasing gradually in width posteriorly, abruptly narrowed subapically to short acute dorsally hooked apex, ventral margin of subapical constriction acutely ridged. Aedeagus simple; shaft directed dorsally, usually of uniform width, rarely tapered to apex over distal half; gonopore extending approximately two-thirds length of shaft; anterior incision slightly shorter than gonopore, extending to near midlength of shaft.

REMARKS. The variability of the present species in the shape of the pygophore processes occurs throughout the full range of the species and shows little evidence of a geographical cline. The usual form, illustrated as type A, occurs in all known Philippine localities but is replaced in Sabah and West Malaysia by the more robust and sinuate form, type B, which is also found in Palawan, Busuanga and Luzon. Type F, a form somewhat intermediate between type A and type B, occurs in Sabah, Mindanao and Luzon. Type C, a form similar to type F but without serrations on the subapical ventral margin, is found in the same localities as type F and in addition in Palawan. Types D and E, both of which are similar to type C but straight rather than sinuate, are known only on Tawi Tawi.

Variation in the shape of the aedeagus and styles is much less than in the pygophore processes. The usual shape of the aedeagus is that illustrated for Palawan in which the shaft is of approximately uniform width. This is found in all localities whilst the tapered form illustrated for Borneo and West Malaysia is found in only a few of the specimens from these two areas. The normal shape of the style, illustrated for Palawan, likewise occurs in all localities whilst the more abruptly constricted form is known in only one specimen from Borneo and two from West Malaysia.

This species resembles *harpago* but differs in the shape of the style, the relative lengths of the gonopore and anterior incision and in having a more sinuate pygophore process in the majority



Figs 493–503 *Batracomorpha juno*. 493, 494, aedeagus (Borneo); 495, aedeagus, usual shape (Palawan); 496, style, usual shape (Palawan); 497, style (Borneo); 498, pygophore, Type A; 499, same, Type F; 500, same, Type B; 501, same, Type C; 502, same, Type D; 503, same, Type E. (For further explanation see 'Techniques and methods' and text.)

of specimens. It is also similar to *numitor* from the Philippines but differs likewise in having a more sinuate pygophore process and a more robust style. It differs from the closely related species *punctatus* from Christmas Island in the Indian Ocean principally in the relative width of the head which in the present species is narrower than the pronotum, as normal for the genus. The species *punctatus* is unusual in having the head as wide as or wider than the pronotum and the eyes more prominent than normal. The two species also differ slightly in the shape of the style, that of *juno* being more abruptly constricted apically.

MATERIAL EXAMINED

Holotype ♂, **Philippines**: Palawan, P. Princesa (*Baker*) (USNM).

Paratypes. **Borneo:** 26 ♂, Sabah (BMNH, BPBM). **Philippines:** 40 ♂, 8 ♀, Balabac, Busuanga, Culion, Luzon, Mindanao, Palawan and Tawi Tawi (AMNH, BPBM, FMNH, ZM). **West Malaysia:** 2 ♂, 1 ♀ (BMNH).

***Batracomorphus punctatus* (Kirby) comb. n.**

(Figs 504–507)

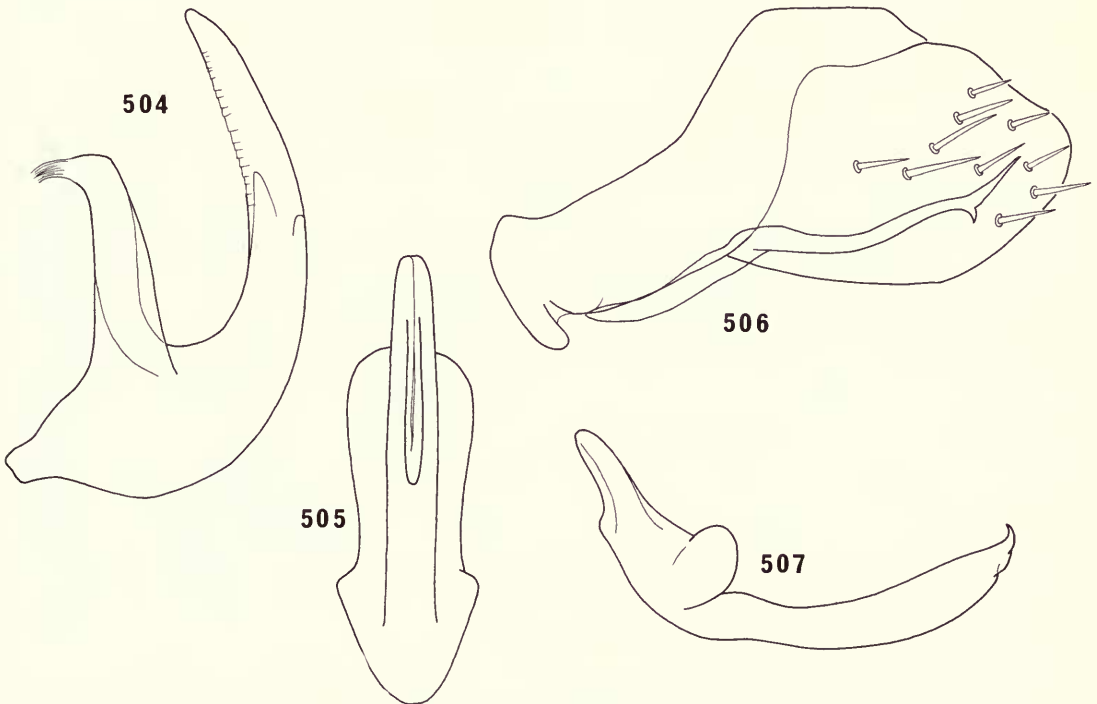
Idiocerus(?) *punctatus* Kirby, 1900: 138. Holotype ♂, CHRISTMAS ISLAND (BMNH) [examined].

Length: ♂, 4.32–4.56 mm (mean 4.40 mm).

Head as wide as or wider than pronotum, eyes more prominent than normal.

Male genitalia. Pygophore processes slender, directed posteriorly to midlength and then dorsoposteriorly, slightly sinuate, apex acute, a small subapical spur on ventral margin. Styles with apical process expanded over distal half, tapering to short acute dorsally hooked apex, ventral margin acuminate subapically. Aedeagus simple; shaft directed dorsally, turning slightly anterodorsally at midlength; gonopore extending to just basad of midlength of shaft; anterior incision slightly shorter than gonopore.

REMARKS. This species, known only from Christmas Island in the Indian Ocean, differs from normal in having the head as wide as or wider than the pronotum and the eyes more prominent. It is closely related to *juno* in the shape of the male genitalia but differs in having the style less abruptly constricted apically.



Figs 504–507 *Batracomorphus punctatus*. 504, 505, aedeagus; 506, pygophore; 507, style. (For further explanation see 'Techniques and methods'.)

DISTRIBUTION. Christmas Island (Indian Ocean).

MATERIAL EXAMINED

Idiocerus punctatus Kirkby, holotype ♂, Christmas Island: Flying Fish Cove, x.1897 (C. W. Andrews) (BMNH).

Christmas Island: 3 ♂, 8 ♀ (BMNH).

***Batracomorphus numitor* sp. n.**

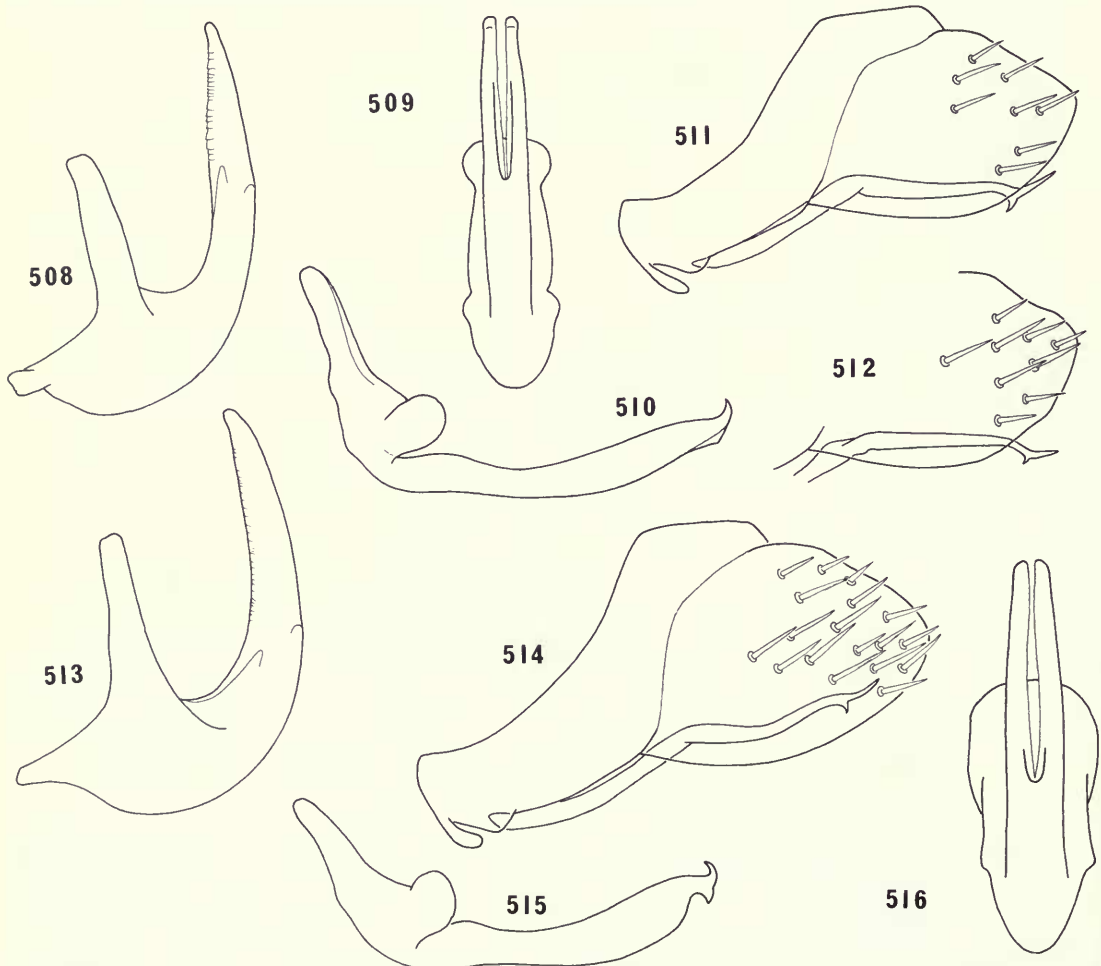
(Figs 508–512)

Length: ♂, 4.40–4.56 mm (mean 4.46 mm).

Male genitalia. Pygophore processes slender, directed posteriorly, apex acute and slightly upturned, a short spur-like projection subapically on ventral margin. Style with apical process elongate, uniform in width or slightly expanded over distal half, tapering to short acute dorsally hooked apex, ventral margin acutely ridged subapically and slightly extended as small lamellate lobe. Aedeagus simple; shaft slender, directed dorsally, tapering to apex; gonopore extending to approximately midlength of shaft; anterior incision slightly shorter than gonopore.

REMARKS. The pygophore processes in this species are slightly variable, as illustrated, within the same population. The species is similar to *harpago* but has a more elongate aedeagus and style with a subapical expansion on the latter.

MATERIAL EXAMINED

Holotype ♂, **Philippines**: Luzon, Mt Makiling (*Baker*) (USNM).Paratypes. **Philippines**: 4 ♂, same data as holotype (USNM).

Figs 508–516 508–512, *Batracomorphus numitor*. (508, 509) aedeagus; (510) style; (511) pygophore; (512) same, same population. 513–516, *B. ixion*. (513) aedeagus; (514) pygophore; (515) style; (516) aedeagus. (For further explanation see 'Techniques and methods'.)

***Batracomorphus ixion* sp. n.**

(Figs 513–516)

Length: ♂, 4.96 mm.

Pronotum and scutellum speckled with variably sized dark brown spots; forewings speckled with larger reddish brown blotches.

Male genitalia. Pygophore processes slender, directed posteriorly to midlength then turned slightly dorsoposteriorly, tapering to acute slightly upturned apex, a small subapical spur on ventral margin. Styles with apical process expanded over distal half, abruptly narrowed subapically to short acute dorsally hooked apex, a small subapical triangular expansion on ventral margin. Aedeagus simple; shaft slender, directed dorsally, tapering slightly to apex; gonopore extending approximately two-thirds length of shaft; anterior incision extending slightly more basad than gonopore.

REMARKS. This species is similar to *mettus* from Sarawak but has a more elongate aedeagus with the gonopore and anterior incision extending more basad, the style more expanded distally and the pygophore processes turned more abruptly dorsoposteriorly at midlength. It also differs from *mettus* in being larger and having dark brown and reddish brown speckling on the pronotum, scutellum and forewings. It is similar also to *tarpeia* from New Britain but differs from this species also in size and external markings as well as having a more robust style and a more slender and sinuate pygophore process.

MATERIAL EXAMINED

Holotype ♂, **New Britain**: Gazelle Peninsula, Mt Sinewit, 900 m, 5–14.xi.1962 (*J. Sedlacek*) (BPBM, Type No. 12,552).

***Batracomorphus maia* sp. n.**

(Figs 517–520)

Length: ♂, 4.56–5.12 mm (mean 4.97 mm).

Male genitalia. Pygophore processes slender, directed posteriorly, distal third slightly upturned, apex acute, a small lamellate projection usually present on ventral margin approximately one-fourth to one-third the distance from apex. Styles with apical process expanded over distal half, abruptly narrowed approximately one-fifth of distance from apex then tapered to short acute dorsally hooked apex, ventral margin with small lamellate expansion subapically. Aedeagus simple; shaft directed dorsally; gonopore and anterior incision extending approximately two-thirds length of shaft.

REMARKS. This species is similar to *pilumnus* from Borneo and *tyndareus* from Australia in the shape of the pygophore processes but differs from both in the shape of the style and the relative length of the gonopore and anterior incision. It is also larger than either of these two species and differs from *tyndareus*, in addition, in lacking dark brown spots on the forewings. It is similar also to *mettus* from Borneo but differs in having the subapical projection on the pygophore process lamellate rather than spine-like, the anterior incision of the aedeagus shorter than the gonopore and the apical process of the style more abruptly constricted subapically.

MATERIAL EXAMINED

Holotype ♂, **Philippines**: Luzon, Camarines Sur, Mt Isarog, 21–22.v.1963 (*H. M. Torrevillas*) (BPBM, Type No. 12,553).

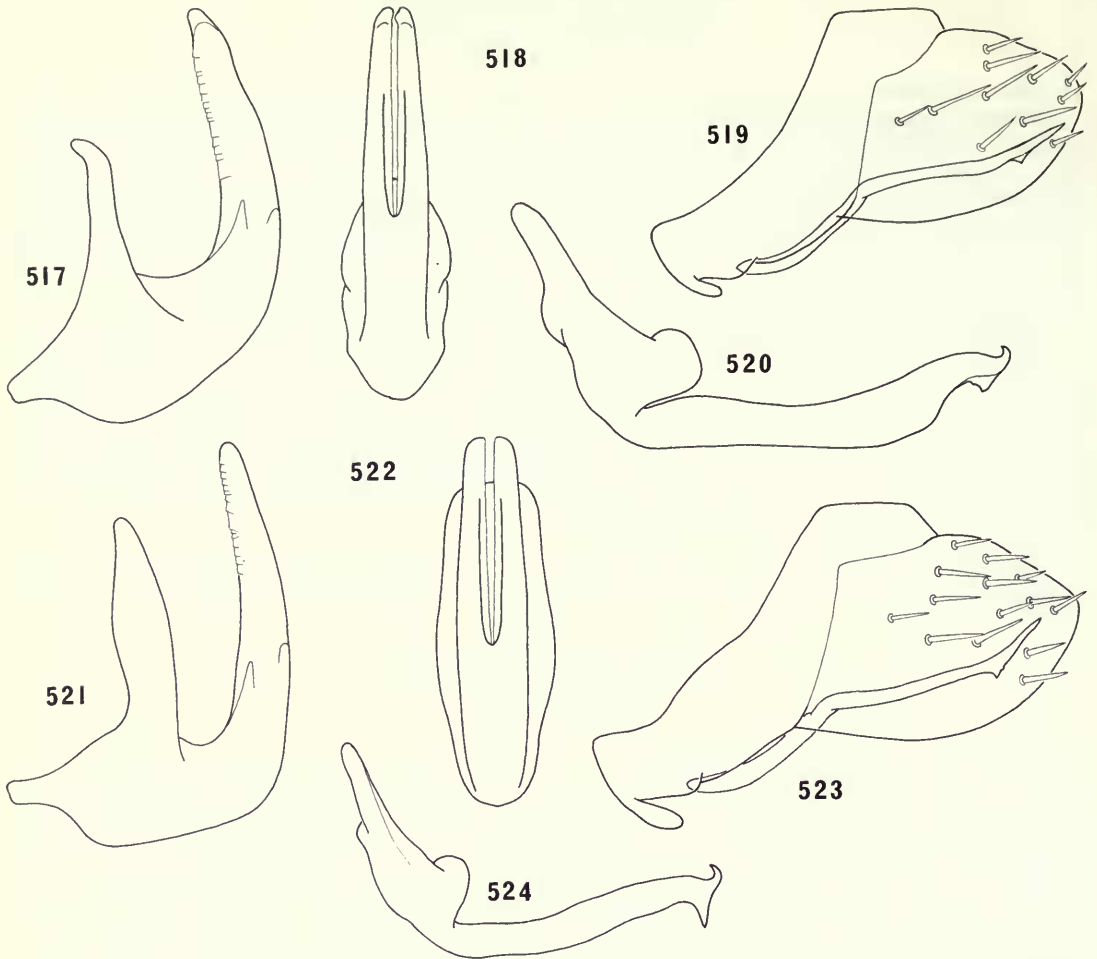
Paratypes. **Philippines**: 12 ♂, 1 ♀, Luzon (BPBM).

***Batracomorphus pilumnus* sp. n.**

(Figs 521–524)

Length: ♂, 4.24–4.48 mm (mean 4.36 mm).

Male genitalia. Pygophore processes slender, directed posteriorly and slightly dorsally with distal portion turned slightly more dorsad, apex acute, a small triangular spur usually present subapically on ventral margin. Styles with apical process of uniform width, terminating in short acute dorsally hooked apex, a triangular projection subapically on ventral margin. Aedeagus simple; shaft slender, directed dorsally, tapering slightly to apex; gonopore extending approximately two-thirds length of shaft; anterior incision extending slightly more basad than gonopore.



Figs 517–524 517–520, *Batracomorpha maia*. (517, 518) aedeagus; (519) pygophore; (520) style. 521–524, *B. pilumnus*. (521, 522) aedeagus; (523) pygophore; (524) style. (For further explanation see 'Techniques and methods'.)

REMARKS. This species is similar to *tyndareus* from Australia but differs in having the aedeagus more rectangular basally, the apical process of the style less constricted immediately basad of subapical projection and in the absence of dark brown spots on the forewings.

MATERIAL EXAMINED

Holotype ♂, **Borneo**: Sabah, Tawau, Quoin Hill, 15–20.vii.1962 (*H. Holtmann*) (BPBM, Type No. 12,554).

Paratypes. **Borneo**: 46 ♂, Sabah and Sarawak (BMNH, BPBM).

***Batracomorpha tyndareus* sp. n.**

(Figs 525–529)

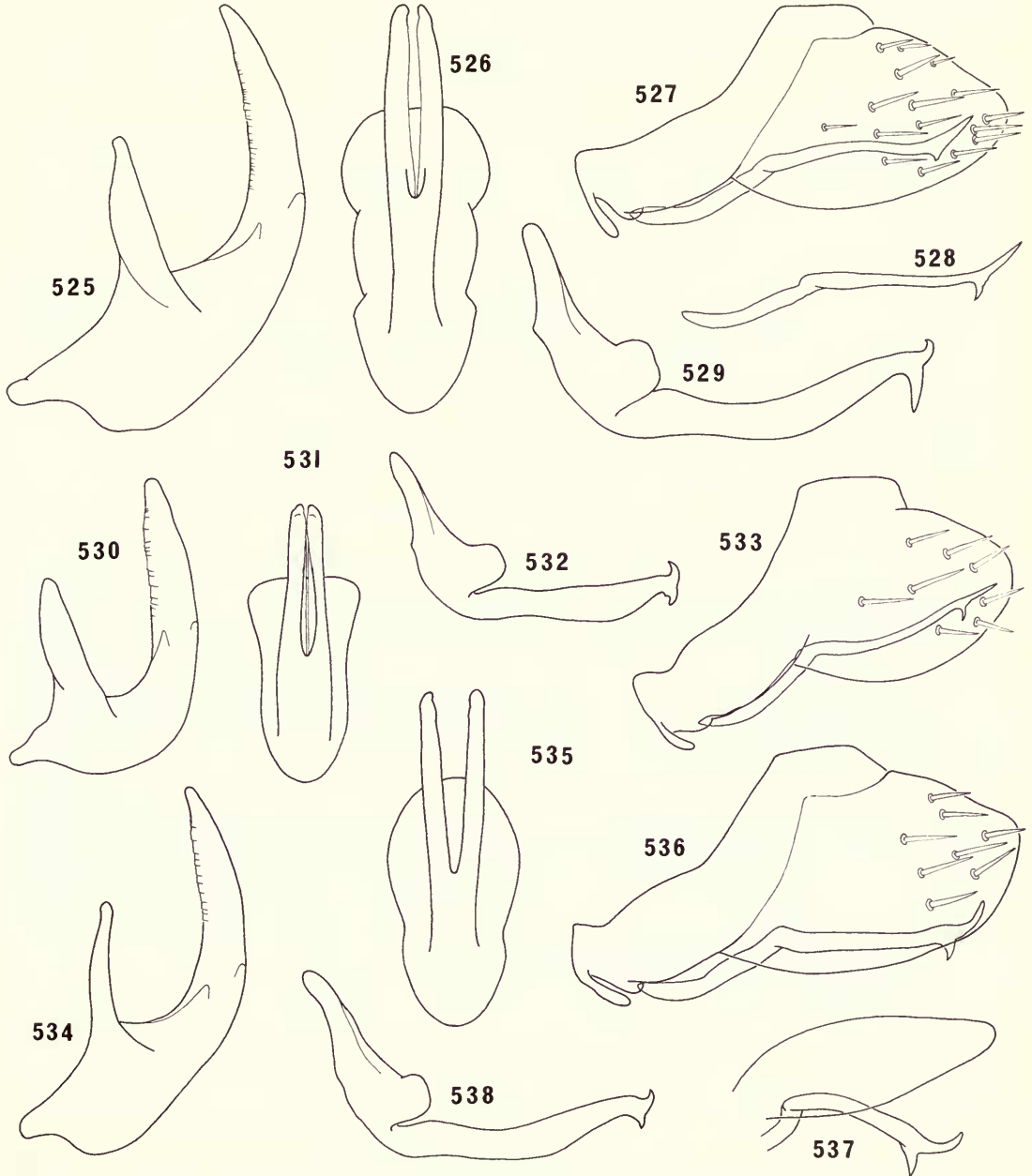
Length: ♂, 4.32–4.64 mm (mean 4.43 mm).

Forewings with small dark brown spots.

Male genitalia. Pygophore processes slender, directed posteriorly with distal portion turned dorsoposteriorly, apex acute, a ventral spur-like projection subapically with ventral margin between it and apex acuminate. Styles with apical process of approximately uniform width to just distad of midlength then tapering to short acute dorsally hooked apex, a large ventrally directed thorn-like projection subapically on

ventral margin. Aedeagus simple; shaft directed dorsally and curving slightly anterodorsally from midlength, tapering to apex; gonopore extending to just basad of midlength of shaft; anterior incision slightly longer than gonopore.

REMARKS. This species is similar to *pilumnus* from Borneo but with the aedeagus less angular in lateral aspect, apical process of style more tapered over distal half and with dark brown spots on



Figs 525–538 525–529, *Batracomorphus tyndareus*. (525, 526) aedeagus; (527) pygophore; (528) left pygophore process, left lateral view; (529) style. 530–533, *B. mettus*. (530, 531) aedeagus; (532) style; (533) pygophore. 534–538, *B. tarpeia*. (534, 535) aedeagus; (536) pygophore; (537) left pygophore lobe and process, posterolateroventral view; (538) style. (For further explanation see 'Techniques and methods'.)

the forewings. It is similar also to *latinus* from New Britain but is much smaller, has dark brown spots on the forewings and the subapical projection on the style more slender. It shows greatest similarity to *tarpeia* from New Britain but has a much larger subapical process on the style.

MATERIAL EXAMINED

Holotype ♂, **Australia**: Queensland, Hann River Crossing, 106 m, 28.viii.1948 (*L. J. Brass*) (AMNH).
Paratypes. **Australia**: 5 ♂, Queensland (AMNH, BPBM, UQ).

***Batracomorphus mettus* sp. n.**

(Figs 530–533)

Length: ♂, 4.64 mm.

Male genitalia. Pygophore processes filamentous, directed posterodorsally, apex acute, with small subapical spur on ventral margin. Styles with apical process expanded over distal half, tapering to short acute dorsally hooked apex, a short subapical projection on ventral margin. Aedeagus simple; shaft directed dorsally; gonopore extending to approximately midlength of shaft; anterior incision approximately same length as gonopore.

REMARKS. This species is similar to *ixion* from New Britain but is slightly smaller and lacks the dark brown spots on the dorsum. The aedeagus in the present species is also less curved and more rectangular basally, the gonopore and anterior incision of approximately equal length and the apical process of the style and the pygophore processes less sinuate.

MATERIAL EXAMINED

Holotype ♂, **Borneo**: Sarawak, Mt Dulit, 1220 m, moss forest, 25.x.1932 (*B. M. Hobby & A. W. Moore*) (BMNH).

***Batracomorphus tarpeia* sp. n.**

(Figs 534–538)

Length: ♂, 4.40 mm.

Forewings speckled with small variably sized dark brown spots.

Male genitalia. Pygophore processes slender, directed posteriorly and curving mesally from midlength, apex acute and upturned, a spur-like projection subapically on ventral margin. Styles with apical process slender, slightly expanded at midlength, tapering to short acute dorsally hooked apex, a small triangular expansion subapically on ventral margin. Aedeagus simple; shaft slender, directed dorsally and curving slightly anterodorsally, tapering to apex in lateral aspect; gonopore extending approximately two-thirds length of shaft; anterior incision slightly longer than gonopore.

REMARKS. This species is similar to *ixion* from New Britain but is smaller, lacks dark brown spots on the pronotum and scutellum and has different markings on the forewings. The aedeagus and styles are also less robust and the pygophore processes less sinuate and more robust. It also resembles *latinus* from New Britain but is much smaller and has dark brown spots on the forewings. It differs from *latinus* also in having the shaft of the aedeagus more tapered distally, the subapical projection on the style relatively smaller and the pygophore processes less sinuate and without subapical serrations on the ventral margin.

MATERIAL EXAMINED

Holotype ♂, **New Britain**: Silanga, Nakanai Mts, 150 m, 1.viii.1956 (*E. J. Ford Jr*) (BPBM Type No. 12,555).

Paratypes. **New Britain**: 3 ♀, same data as holotype (BPBM).

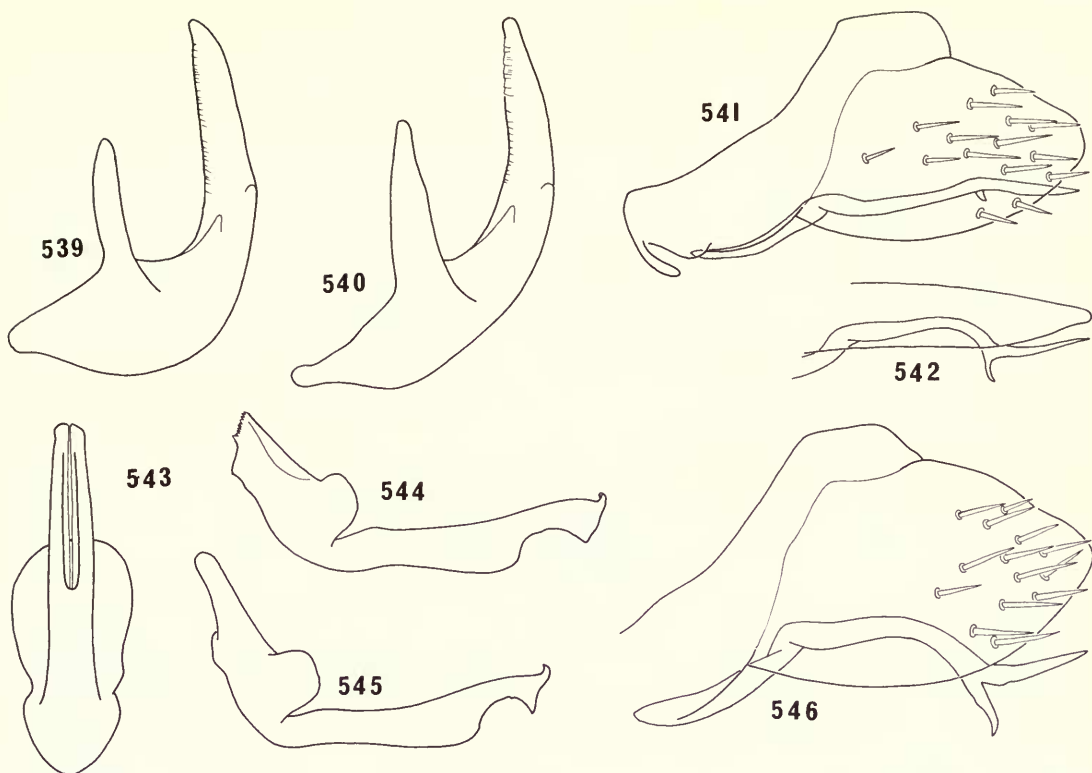
***Batracomorphus eryx* sp. n.**

(Figs 539–546)

Length: ♂, 4.32–4.80 mm (mean 4.56 mm).

Vertex, pronotum, scutellum and forewings speckled with small variably sized dark brown spots.

Male genitalia. Pygophore processes elongate, directed posteriorly over basal half then curving ventroposteriorly or mesoposteriorly and finally posteriorly over distal third, apex acute, a short spur-like



Figs 539–546 *Batracomorphy eryx*. 539, 540, aedeagus; 541, pygophore (Waigeu Island, New Guinea); 542, same, ventral view; 543, aedeagus; 544, style (Finisterre Mts, New Guinea); 545, same (Waigeu Island); 546, pygophore (Finisterre Mts). (For further explanation see 'Techniques and methods'.)

process approximately one-third distance from apex on ventral or mesal margin. Styles with apical process expanded at midlength then abruptly narrowed to apex; apex acute, turned dorsomesally, hook-like; a triangular expansion subapically on ventral margin. Aedeagus simple; shaft directed dorsally; gonopore extending approximately two-thirds length of shaft; anterior incision extending slightly more basad than gonopore.

REMARKS. The single specimen from the Finisterre Mountains has the pygophore processes slightly more robust, especially the ventral spur, and the subapical expansion on the style slightly larger. It also differs in having the aedeagus less robust basally and may be a distinct species or subspecies.

The present species is similar to *laertes* from New Guinea and New Britain but is much smaller and with the dorsal spots extending over a wider area and variable in size. It also differs in having the apical third of the pygophore processes more slender and without serrations and the aedeagus without basal indentation on the posterior margin.

MATERIAL EXAMINED

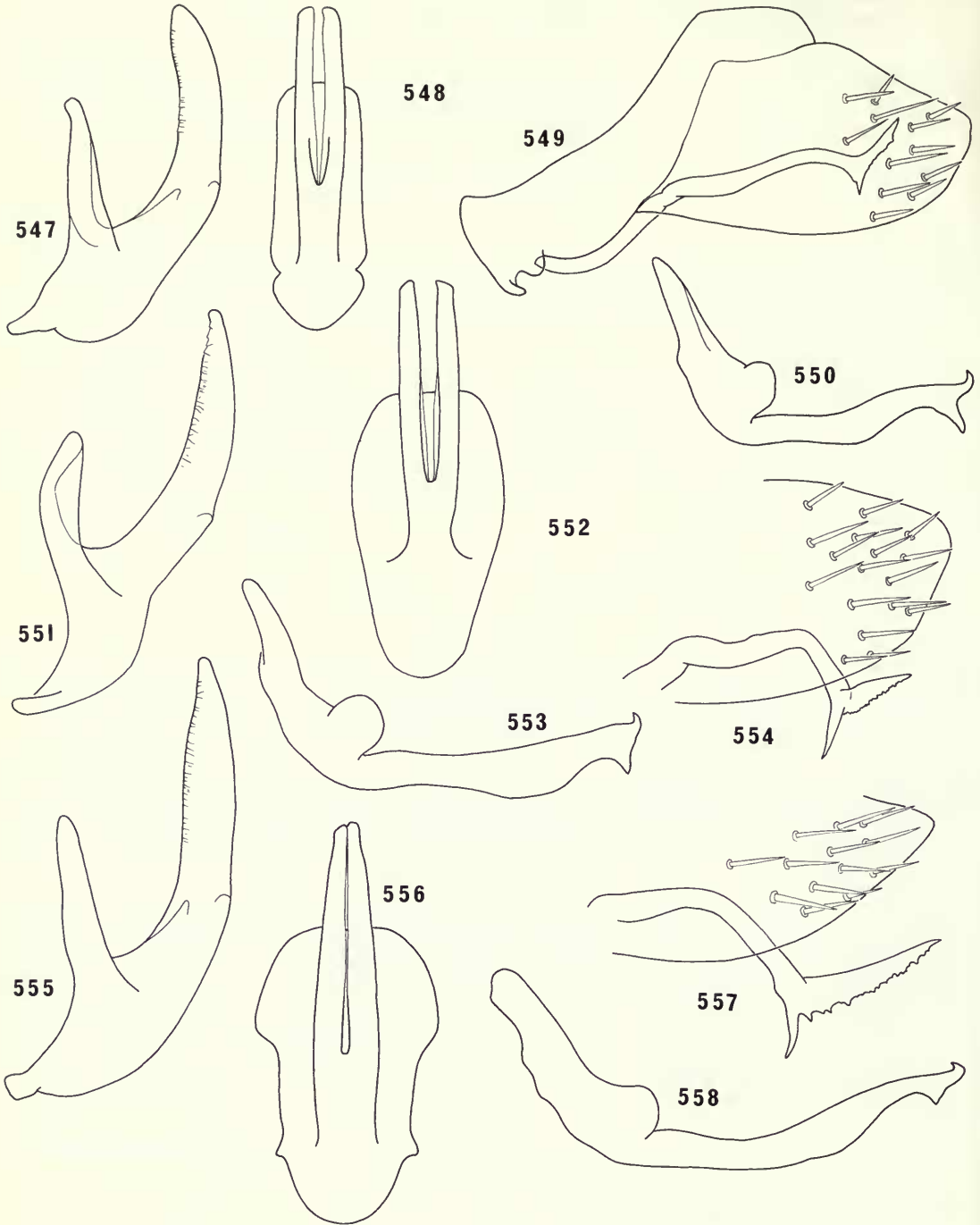
Holotype ♂, New Guinea: Irian Jaya, Waigeu, Camp Nok, 762 m, v.1938 (*L. E. Cheesman*) (BMNH).
Paratypes. New Guinea: 2 ♂, 3 ♀, Irian Jaya and Papua New Guinea (BMNH).

Batracomorphy latinus sp. n.

(Figs 547–550)

Length: ♂, 5.12 mm.

Male genitalia. Pygophore processes slender, directed posteriorly, slightly sinuate, apex acute and turned dorsoposteriorly, a spur-like extension subapically on ventral margin with spur and ventral margin



Figs 547–558 547–550, *Batracomorpha latinus*. (547, 548) aedeagus; (549) pygophore; (550) style. 551–554, *B. laertes*. (551, 552) aedeagus; (553) style; (554) left pygophore lobe and process, left lateral view. 555–558, *B. portunus*. (555, 556) aedeagus; (557) left pygophore lobe and process, ventrolateral view; (558) style. (For further explanation see 'Techniques and methods'.)

distad to it sometimes keel-like and slightly serrate. Styles with apical process slightly expanded at midlength then tapering to short acute dorsally hooked apex, a finger-like projection subapically on ventral margin. Aedeagus simple; shaft directed dorsally; gonopore extending approximately two-thirds length of shaft; anterior incision slightly longer than gonopore.

REMARKS. This species is similar to *tyndareus* from Australia and *tarpeia* from New Britain but differs from both in being much larger and lacking dark brown spots on the forewings. It also differs from both in having the apex of the aedeagus broad rather than tapered, the pygophore processes more sinuate and in the shape of the subapical projection on the style.

MATERIAL EXAMINED

Holotype ♂, **New Britain**: Vunabakan, 180 m, 10 km E. of Keravat, 16–20.xi.1959 (*T. C. Maa*) (BPBM, Type No. 12,556).

Paratype. **New Britain**: 1 ♀, same data as holotype.

***Batracomorphus laertes* sp. n.**

(Figs 551–554)

Length: ♂, 5.20–5.44 mm (mean 5.28 mm).

Forewings paler than body and faintly speckled with dark brown spots.

Male genitalia. Pygophore processes slender, directed posteriorly over basal half then turned posteromesally with distal fourth turned posteriorly, apex acute, a long ventrally directed spur-like projection on ventral margin approximately one-fourth length from apex, the ventral margin distad of spur serrate. Styles with apical process expanded immediately distad of midlength, tapering to short acute dorsally hooked apex, a triangular expansion subapically on ventral margin. Aedeagus simple; shaft directed dorsally, tapering to apex distally, posterior margin broadly concave near base in lateral aspect; gonopore and anterior incision approximately equal in length, extending approximately two-thirds length of shaft.

REMARKS. This species is closely related to *portunus* from New Guinea, but differs in having a more robust style, the ventral spur-like projection on the pygophore process relatively longer and the posterior margin of the aedeagus concave basally. The two species occur together in the same locality in New Guinea and are indistinguishable externally.

MATERIAL EXAMINED

Holotype ♂, **New Guinea**: Papua New Guinea, Madang District, Finisterre Mts, Damanti, 1082 m, 2–11.x.1964 (*M. E. Bacchus*) (BMNH).

Paratypes. **New Guinea**: 5 ♂, 1 ♀, Papua New Guinea (BMNH). **New Britain**: 2 ♂ (BPBM).

***Batracomorphus portunus* sp. n.**

(Figs 555–558)

Length: ♂, 4.64–6.08 mm (mean 5.26 mm).

Forewings faintly mottled with brown.

Male genitalia. Pygophore processes slender, directed posteriorly over basal third then turned posteromesally with distal third turned posteriorly, apex acute, a ventrally directed spur-like projection on ventral margin approximately one-third distance from apex, ventral margin distad of spur serrate. Styles with apical process slender, elongate, slightly expanded immediately distad of midlength then tapering to short acute dorsally hooked apex, a triangular expansion subapically on ventral margin. Aedeagus simple; shaft directed dorsally, tapering to apex distally; gonopore and anterior incision of approximately equal length, extending approximately two-thirds length of shaft.

REMARKS. This species, known from only one locality, shows marked variability in size. It is closely related to *laertes*, which is sympatric in New Guinea and occurs also in New Britain, but differs in having the apical serrated portion of the pygophore process much longer, the apical process of the style more elongate and the posterior margin of the aedeagus smoothly rounded basally. The two species are indistinguishable externally.

MATERIAL EXAMINED

Holotype ♂, **New Guinea**: Papua New Guinea, Madang District, Finisterre Mts, Damanti, 1082 m, 2–11.x.1964 (*M. E. Bacchus*) (BMNH).

Paratypes. **New Guinea**: 4 ♂, same data as holotype (BMNH).

Batracomorphus capaneus sp. n.

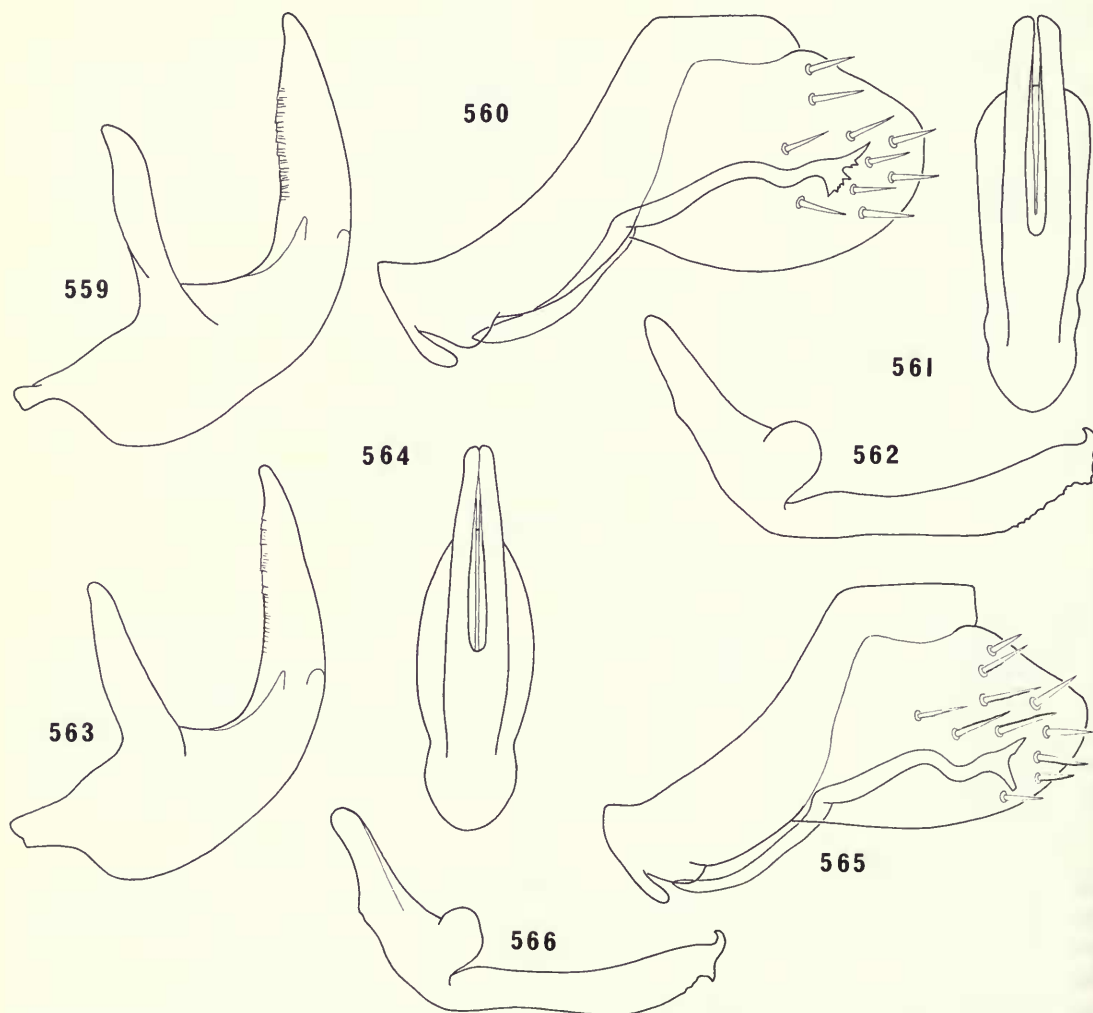
(Figs 559–562)

Length: ♂, 4.32 mm.

Forewings speckled with small dark brown tubercles.

Male genitalia. Pygophore processes slender, directed dorsoposteriorly and slightly sinuate immediately distad of midlength, apex expanded fan-like with posterior margin strongly serrate. Styles with apical process expanded over distal half and tapering to short acute dorsally hooked apex, a small triangular expansion subapically on ventral margin, ventral margin slightly serrate over distal third. Aedeagus simple; shaft directed dorsally, tapering to apex in lateral aspect; gonopore and anterior incision of approximately equal length, extending approximately two-thirds length of shaft.

REMARKS. This species is similar to *laertes* from New Guinea and New Britain in the general shape of the male genitalia but differs in having a more robust aedeagus, the ventral margin of the style serrate distally and the apical portion of the pygophore process and subapical spur relatively smaller and linked together by a strongly serrate expansion. It is also smaller than *laertes*.



Figs 559–566 559–562, *Batracomorphus capaneus*. (559) aedeagus; (560) pygophore; (561) aedeagus; (562) style. 563–566, *B. palamedes*. (563, 564) aedeagus; (565) pygophore; (566) style. For further explanation see 'Techniques and methods'.

MATERIAL EXAMINED

Holotype ♂, **Borneo**: Sabah, Tawau, Quoin Hill, jungle, 3-7.vii.1962 (*H. Holtmann*) (BPBM, Type No. 12,557).

Batracomorphus palamedes sp. n.

(Figs 563-566)

Length: ♂, 3.92 mm.

Forewings speckled with small dark brown tubercles.

Male genitalia. Pygophore processes slender, directed dorsoposteriorly and slightly sinuate immediately distad of midlength, apex bifid with branches relatively short and of approximately equal length, the upper one acute and directed dorsoposteriorly and the lower one truncate and directed ventroposteriorly. Styles with apical process expanded over distal half and tapering to short acute dorsally hooked apex, a small triangular expansion subapically on ventral margin, the ventral margin immediately basad of subapical expansion slightly serrate. Aedeagus simple; shaft directed dorsally, tapering to apex in lateral aspect; gonopore and anterior incision of approximately equal length, extending approximately two-thirds length of shaft.

REMARKS. This species is very similar to *capaneus* from the same locality, and differs only in the apex of the pygophore process, the slightly more slender aedeagus and the more restricted serrations at the apex of the style. More material of each of these species may show them to be the same.

MATERIAL EXAMINED

Holotype ♂, **Borneo**: Sabah, Tawau, Quoin Hill, Cocoa Research Station, 22.viii.1962 (*Y. Hirashima*) (BPBM, Type No. 12,558).

Batracomorphus rhea sp. n.

(Figs 567-571)

Length: ♂, 4.88 mm.

Forewings paler than body; pronotum, scutellum and forewings speckled with small dark brown spots.

Male genitalia. Pygophore processes slender, directed posteriorly at base with medial third bending posteromesally, apical third turned abruptly dorsally and acutely ridged and weakly serrate on posterior margin. Styles with apical process slightly expanded at midlength then tapering to short acute dorsally hooked apex, a large triangular expansion subapically on ventral margin. Aedeagus simple; shaft directed dorsally and curving slightly anterodorsally, tapering to apex distally; gonopore extending to near base of shaft; anterior incision slightly longer than gonopore.

REMARKS. This species is similar to *daunus* from New Guinea but differs in having the pygophore processes turned posteromesally at their midlength and the aedeagus slightly more robust. It may also be distinguished by the presence of dark brown spots on the pronotum, scutellum and forewings.

MATERIAL EXAMINED

Holotype ♂, **New Guinea**: Irian Jaya, Cyclops Mts, Sabron, 610 m, vi.1936 (*L. E. Cheesman*) (BMNH).
Paratypes. **New Guinea**: 2 ♀, same data as holotype.

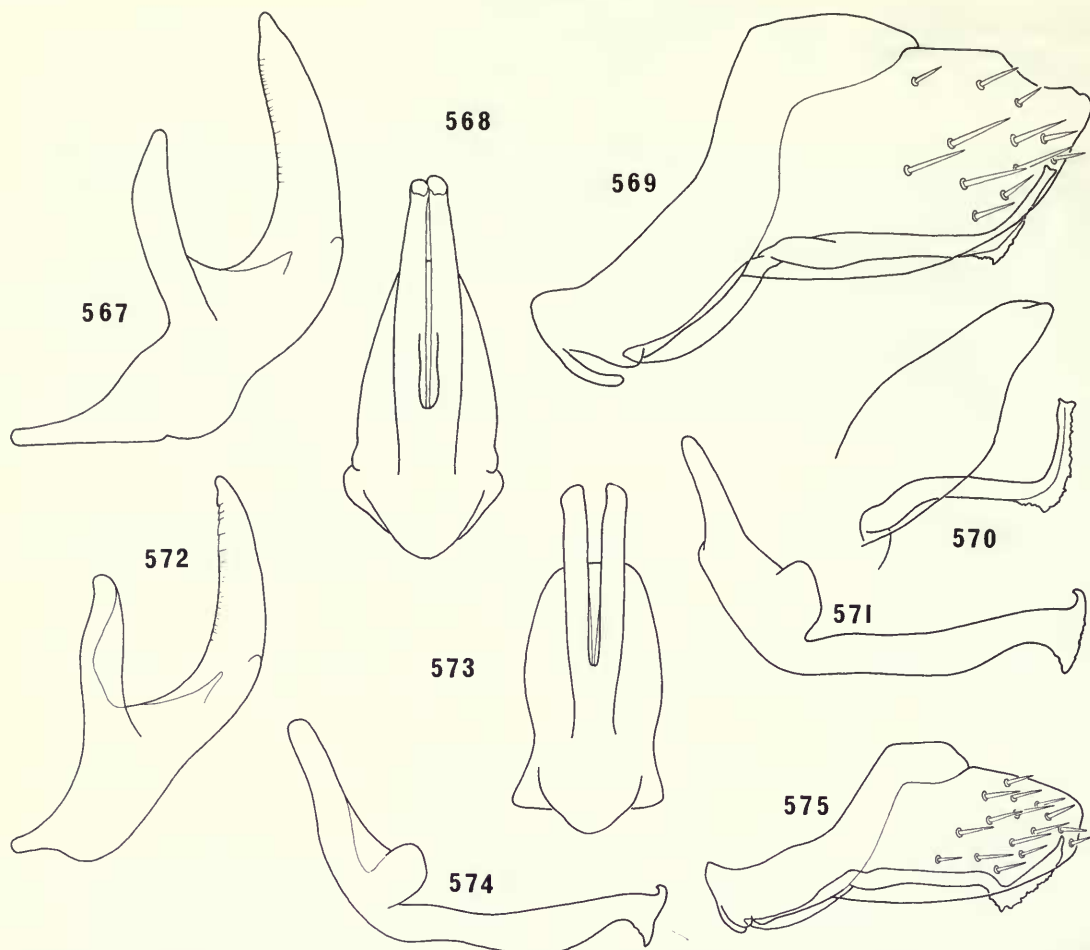
Batracomorphus daunus sp. n.

(Figs 572-575)

Length: ♂, 4.96 mm.

Male genitalia. Pygophore processes slender, directed posteriorly, apical third turned abruptly dorso-posteriorly with posterior margin acutely ridged and mildly serrate, apex acute. Styles with apical process expanded at midlength then tapering to short acute dorsally hooked apex, a triangular expansion subapically on ventral margin. Aedeagus simple; shaft directed dorsally, tapering to apex in lateral aspect; gonopore extending to just basad of midlength of shaft; anterior incision extending to near base of shaft.

REMARKS. This species is closely related to *rhea* from New Guinea but lacks dark brown spots on



Figs 567–575 567–571, *Batracomorpha rhea*. (567, 568) aedeagus; (569) pygophore; (570) left pygophore lobe and process, posterolateroventral view; (571) style. 572–575, *B. daunus*. (572, 573) aedeagus; (574) style; (575) pygophore. (For further explanation see ‘Techniques and methods’.)

the pronotum, scutellum and forewings, has a more slender aedeagus and the pygophore processes straight rather than curved over their midlength.

MATERIAL EXAMINED

Holotype ♂, **New Guinea**: Papua New Guinea, Mafulu, 1220 m, xii.1933 (*L. E. Cheesman*) (BMNH).

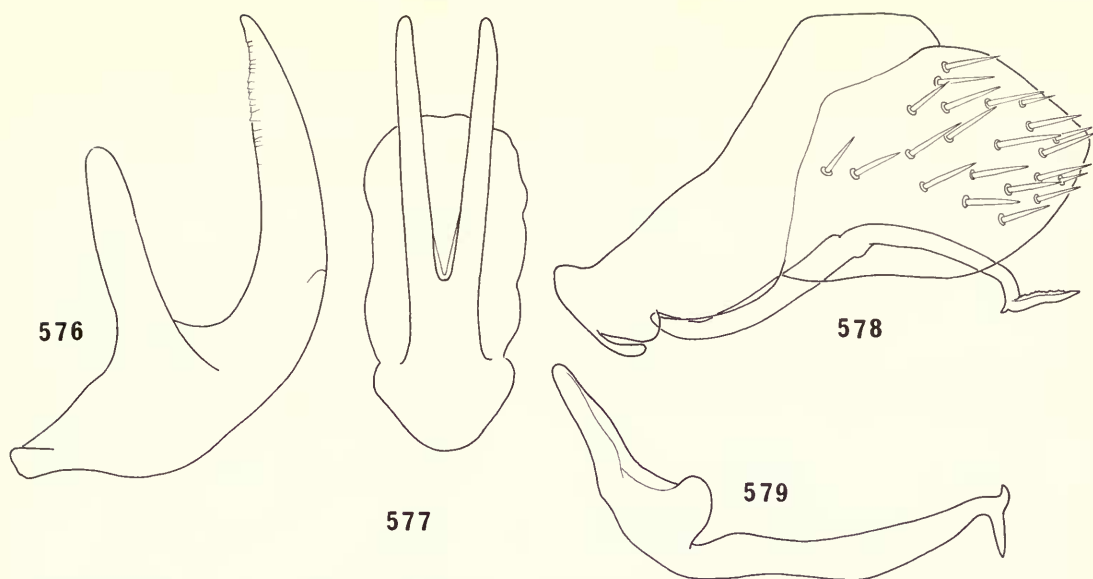
***Batracomorpha jove* sp. n.**

(Figs 576–579)

Length: ♂, 4.80 mm.

Vertex with dark brown spot on each side midway between midline and eye; pronotum and scutellum speckled with small dark brown spots; forewings irregularly mottled and marked with dark brown, apical cells and two transverse bands, one at midlength of clavus and another at apex of clavus, unpigmented.

Male genitalia. Pygophore processes slender, directed posteriorly with distal portion turned abruptly ventrally and then immediately posteriorly, apex acute, posteriorly directed apical portion acuminate and slightly serrate dorsally with a small spur-like projection ventrally at its base. Styles with apical process slender, slightly expanded near midlength then tapered to short acute dorsally hooked apex, a relatively long thorn-like projection subapically on ventral margin. Aedeagus simple; shaft directed dorsally,



Figs 576–579 *Batracomorpha jove*. 576, 577, aedeagus; 578, pygophore; 579, style. (For further explanation see 'Techniques and methods'.)

tapering to apex over distal half in lateral aspect; gonopore and anterior incision of approximately equal length, extending approximately two-thirds length of shaft.

REMARKS. This species is similar to *tyndareus* from Australia but differs not only in external markings but also in the orientation of the apical portion of the pygophore process, the serration on the dorsal margin of the latter and the relatively smaller subapical spur.

MATERIAL EXAMINED

Holotype ♂, **New Guinea:** Papua New Guinea, Madang District, Finisterre Mts, Damanti, 1082 m, 2–11.x.1964 (*M. E. Bacchus*) (BMNH).

***Batracomorpha numa* sp. n.**

(Figs 580–584)

Length: ♂, 5.04–5.12 mm (mean 5.08 mm).

Forewings speckled with small dark brown spots.

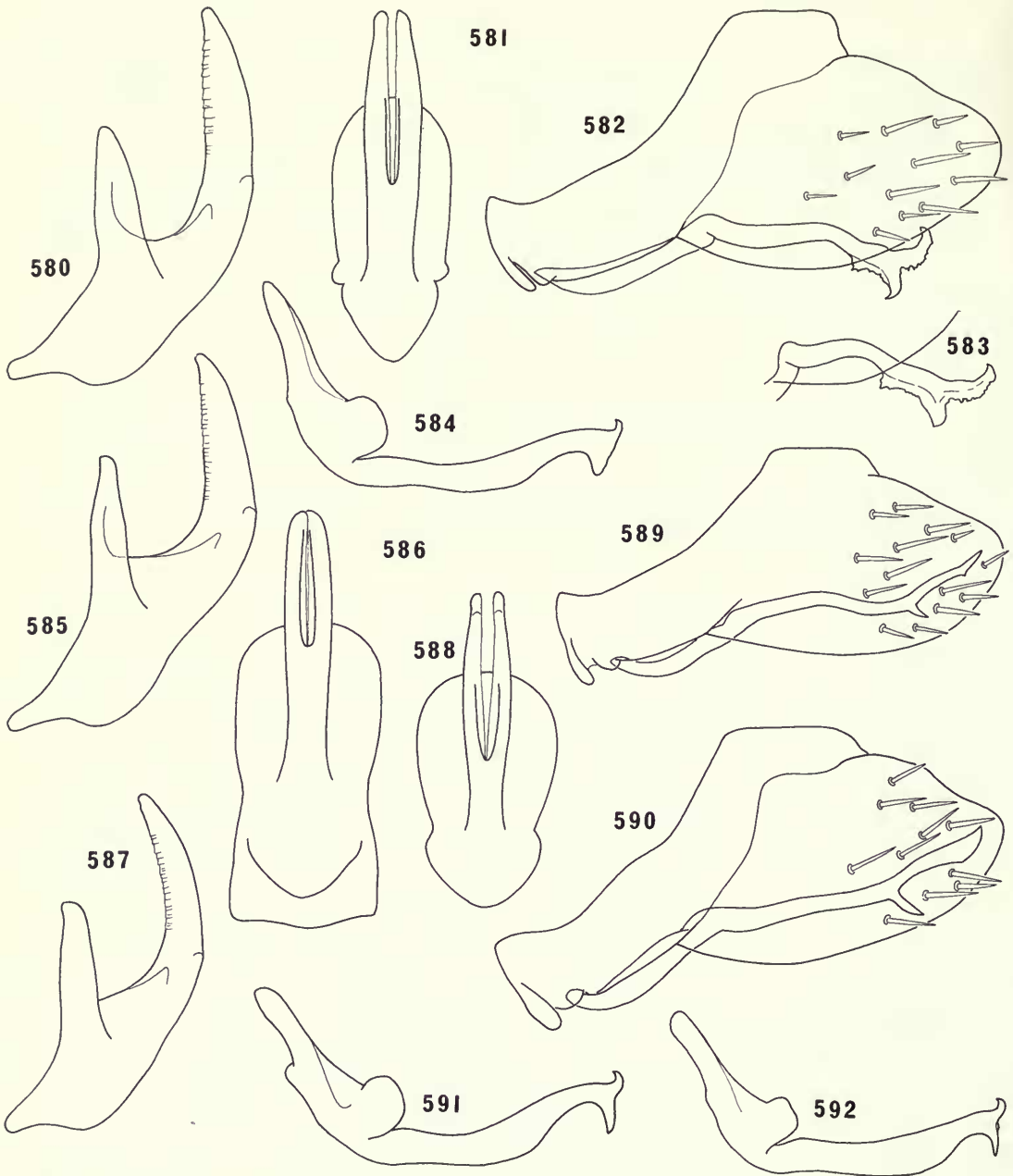
Male genitalia. Pygophore processes slender, directed posteriorly over basal half, distal half turned posteromesally, apex acute and upturned, a spur-like projection subapically on ventral margin, ventral margin over distal half acutely ridged and expanded into irregularly serrated crest. Styles with apical process slender, slightly expanded at midlength and tapering to short acute dorsally hooked apex, a triangular expansion subapically on ventral margin. Aedeagus simple; shaft directed dorsally, tapering to apex distally in lateral aspect; gonopore extending approximately two-thirds length of shaft; anterior incision extending approximately three-fourths length of shaft.

REMARKS. This species is similar to *tarpeia* from New Britain but is much larger. The pygophore processes are also more robust apically with a strong ventral keel over their distal half and the subapical expansion on the style is relatively larger.

MATERIAL EXAMINED

Holotype ♂, **New Guinea:** Papua New Guinea, Madang District, Finisterre Mts, Moro, 1692 m, 30.x–15.xi.1964 (*M. E. Bacchus*) (BMNH).

Paratypes. **New Guinea:** 2 ♂, 1 ♀, same data as holotype.



Figs 580–592 580–584, *Batracomorphus numa*. (580, 581) aedeagus; (582) pygophore; (583) left pygophore process, posterolateral view; (584) style. 585–592, *B. virbius*. (585, 586) aedeagus (Cyclops Mts, New Guinea); (587, 588) aedeagus (Waigeu Island, New Guinea); (589) pygophore (Waigeu Island); (590) pygophore (Cyclops Mts); (591) style (Cyclops Mts); (592) style (Waigeu Island). (For further explanation see 'Techniques and methods'.)

***Batracomorphus virbius* sp. n.**

(Figs 585–592)

Length: ♂, 4.24–5.36 mm (mean 4.70 mm).

Forewings speckled with small irregular dark brown spots, sometimes very faint, rarely also on pronotum and scutellum.

Male genitalia. Pygophore processes slender, slightly sinuate, directed posteriorly with distal third turned slightly more dorsad, expanded subapically or with small dentate projection subapically on ventral margin, apex acute, a short spur-like process on ventral margin approximately one-third distance from apex. Styles with apical process slender, expanding slightly to midlength then tapering to short acute dorsally hooked apex, an acute finger-like projection subapically on ventral margin. Aedeagus simple; shaft directed dorsally, curving slightly anterodorsally towards apex, tapering to apex in lateral aspect; gonopore extending approximately two-thirds length of shaft; anterior incision extending slightly more basad than gonopore.

REMARKS. This species, which extends from the Moluccas to the eastern extremity of New Guinea, varies slightly in the apical expansion of the pygophore processes. The broadly expanded blade-like apex occurs in specimens from the Humboldt Bay and Cyclops Mountains areas of New Guinea whilst those with the more slender apex with only a small dentate projection occur in Ambon Island, Waigeu Island and the Milne Bay area of New Guinea. The Ambon Island specimen also has the large ventral spur on the pygophore process spatulate and truncate. There is also slight variation in both size and pigmentation, two of the Cyclops Mountains specimens being markedly larger than normal and with the dark brown spots occurring also on the pronotum and scutellum.

The species is similar to *latinus* from New Britain but differs in having the pygophore processes more or less expanded apically, with the spur-like process on its ventral margin directed posteriorly rather than ventrally and without serrations. The present species also has the subapical process on the style more slender and the forewings speckled with dark brown spots.

MATERIAL EXAMINED

Holotype ♂, New Guinea: Irian Jaya, Cyclops Mts, Sabron, 610 m, vii.1936 (*L. E. Cheesman*) (BMNH).

Paratypes. Ambon Island: 1 ♂ (BPBM). New Guinea: 5 ♂, 5 ♀, Irian Jaya and Papua New Guinea (BMNH, USNM).

***Batracomorphus nabirensis* Evans**

(Figs 593–596)

Batracomorphus nabirensis Evans, 1972: 651. Holotype ♂, NEW GUINEA (BPBM) [examined].

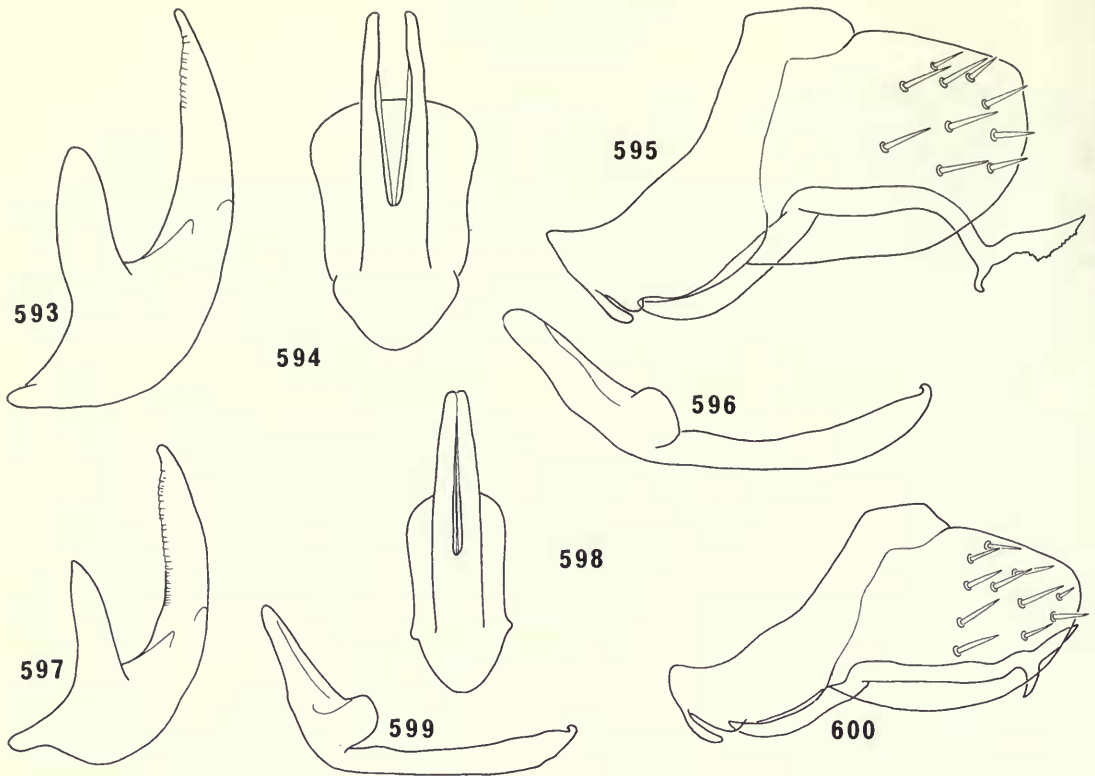
Length: ♂, 4.00 mm.

Vertex and face stramineous, pronotum and scutellum dark brown, forewings translucent, whitish or pale stramineous, apical margin and narrow transverse band at midlength dark brown.

Male genitalia. Pygophore processes slender, directed posteriorly over basal third, ventroposteriorly over mid third, then abruptly posteriorly over distal third, apex acute, a slender finger-like projection on ventral margin approximately one-third distance from apex, ventral margin expanded keel-like and mildly serrate subapically. Styles with apical process slender, slightly expanded over distal half and tapering to short acute dorsally hooked apex. Aedeagus simple; shaft directed dorsally, turning slightly anterodorsally distally, tapering to apex in lateral aspect; gonopore extending approximately two-thirds length of shaft; anterior incision extending slightly more basad than gonopore.

REMARKS. This species resembles *virbius* from New Guinea in having the pygophore processes expanded subapically but differs in the orientation of the processes and in having the subapical expansion marginally serrate. It also differs in lacking a subapical projection on the style and in its coloration.

DISTRIBUTION. New Guinea.



Figs 593–600 593–596, *Batracomorphus nabirensis* (holotype). (593, 594) aedeagus; (595) pygophore; (596) style. 597–600, *B. agenor*. (597, 598) aedeagus; (599) style; (600) pygophore. (For further explanation see 'Techniques and methods'.)

MATERIAL EXAMINED

Batracomorphus nabirensis Evans, holotype ♂, New Guinea: Irian Jaya, Nabire, 5–50 m, jungle, 25.viii–2.ix.1962 (*H. Holtmann*) (BPBM).

New Guinea: 1 ♀, Papua New Guinea (BPBM).

Batracomorphus agenor sp. n.

(Figs 597–600)

Length: ♂, 3.76–4.00 mm (mean 3.92 mm).

Disc of pronotum, one large and two small spots on each anterolateral margin of pronotum, and apex and basal angles of scutellum, dark brown; forewings whitish stramineous or greyish; females with pronotum and scutellum more uniformly dark brown and with a narrow transverse dark brown band at midlength of forewings.

Male genitalia. Pygophore processes slender, directed posteriorly, apex acute and turned dorsoposteriorly, a spur-like projection subapically on ventral margin. Styles with apical process slender, slightly expanded over distal half, tapering to short acute dorsally hooked apex. Aedeagus simple; shaft directed dorsally, tapering to apex distally in lateral aspect; gonopore extending approximately two-thirds length of shaft; anterior incision extending slightly more basad than gonopore.

REMARKS. This species resembles *tarpeia* from New Britain in the shape of its pygophore processes but has the latter directed posteriorly throughout their length rather than turned mesally from their midlength. It also lacks a subapical expansion on the style and differs in coloration.

MATERIAL EXAMINED

Holotype ♂, **New Guinea**: Papua New Guinea, Madang District, Finisterre Mts, Damanti, 1082 m, 2–11.x.1964 (*M. E. Bacchus*) (BMNH).

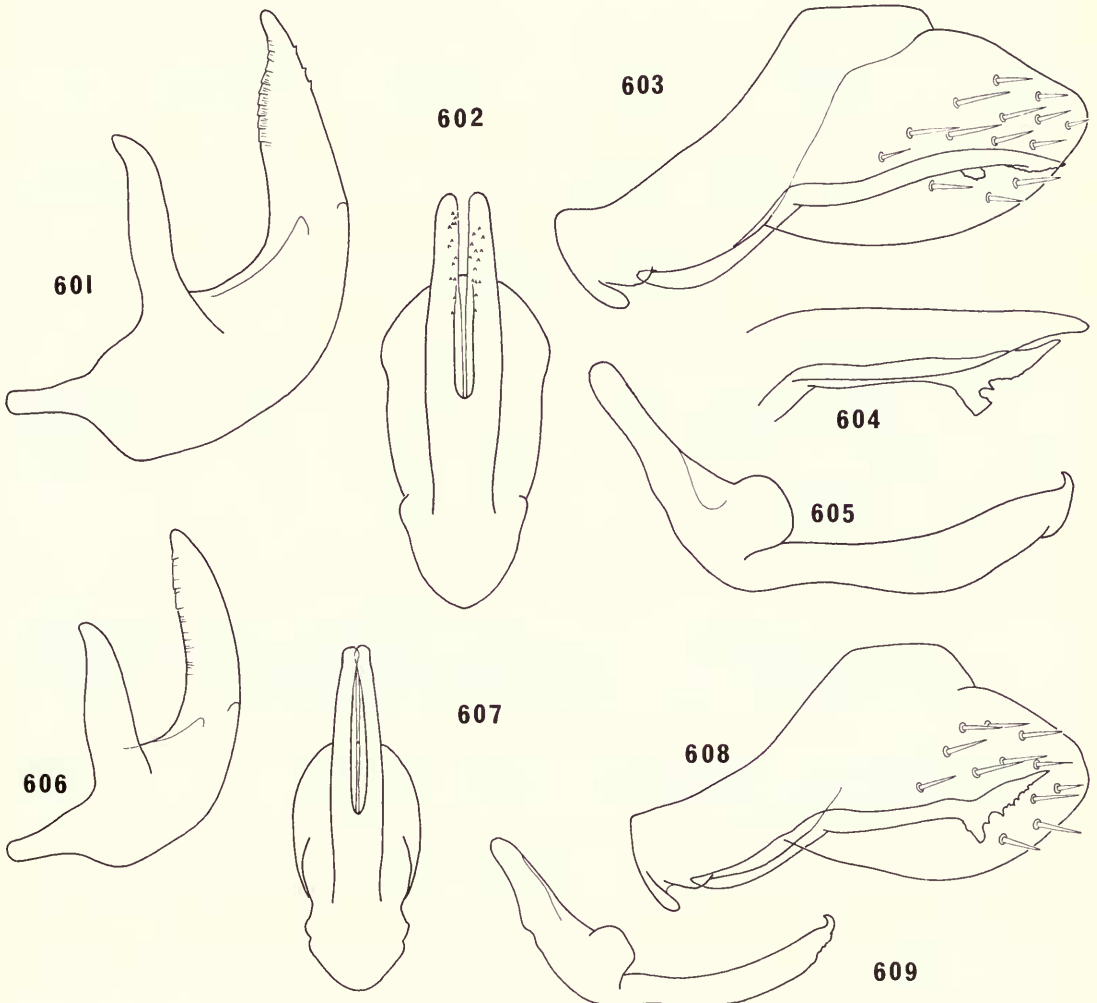
Paratypes. **New Guinea**: 7 ♂, 7 ♀, Papua New Guinea (BMNH).

Batracomorphus musaeus sp. n.

(Figs 601–605)

Length: ♂, 5.44 mm.

Male genitalia. Pygophore processes elongate, directed posteriorly, apex acute, a short medially directed truncate projection on medial margin approximately one-third distance from apex, medial margin of process distad of projection lamellate and slightly serrate. Styles with apical process slightly expanded over distal half, tapering to short acute dorsally hooked apex, a small convex lamellate expansion subapically on ventral margin. Aedeagus simple, robust; shaft directed dorsally, abruptly tapered subapically in lateral aspect, posterior margin with small tubercles distally; gonopore and anterior incision of approximately equal length, extending to just basad of midlength of shaft.



Figs 601–609 601–605, *Batracomorphus musaeus*. (601, 602) aedeagus; (603) pygophore; (604) left pygophore lobe and process, ventral view; (605) style. 606–609, *B. ceres*. (606, 607) aedeagus; (608) pygophore; (609) style. (For further explanation see 'Techniques and methods'.)

REMARKS. This species is similar to *ceres* from New Guinea but differs in the orientation of the pygophore processes, a more expanded style and a more robust aedeagus the shaft of which is more abruptly tapered apically. It also differs markedly in size.

MATERIAL EXAMINED

Holotype ♂, **Philippines**: Luzon, Ifugao Province, Liwo, 8 km E. of Mayoyao, 1000–1300 m, 12.vi.1967 (*H. M. Torrevillas*) (BPBM, Type No. 12,559).

***Batracomorphus ceres* sp. n.**

(Figs 606–609)

Length: ♂, 4.08–4.16 mm (mean 4.10 mm).

Male genitalia. Pygophore processes elongate, directed posteriorly with apical third turned slightly dorsally, apex acute, a short projection on ventral margin at base of upturned section with ventral margin between it and apex acuminate and serrate. Styles with apical process slender, of uniform width throughout length or only slightly expanded over distal half, terminating in short acute dorsally hooked apex, ventral margin mildly serrate subapically. Aedeagus simple; shaft directed dorsally, curving slightly anterodorsally over distal half; gonopore extending approximately three-fourths length of shaft; anterior incision extending slightly more basad than gonopore.

REMARKS. This species is similar to *musaeus* from the Philippines but differs in the orientation of the pygophore processes, a more slender style and aedeagus and is much smaller. It is known only from north-east Irian Jaya.

MATERIAL EXAMINED

Holotype ♂, **New Guinea**: Irian Jaya, Cyclops Mts, Sabron, 610 m, vii.1936 (*L. E. Cheesman*) (BMNH). Paratypes. **New Guinea**: 2 ♂, Irian Jaya (BMNH).

***Batracomorphus hera* sp. n.**

(Figs 610–615)

Length: ♂, 5.12–5.28 mm (mean 5.20 mm).

Male genitalia. Pygophore processes slender, directed posteriorly with distal half directed dorsoposteriorly to greater or lesser degree, strongly arched in ventral aspect with apex directed posteromesally, apex acute, a subapical spur-like projection on lateral margin, lateral margin between spur and apex acuminate and expanded to variable degree. Style with apical process expanded over distal half, tapering to short acute dorsally hooked apex, ventral margin acuminate and slightly serrate subapically. Aedeagus simple; shaft directed dorsally, curving anterodorsally over distal half, tapering to apex in lateral aspect; gonopore extending approximately three-fourths length of shaft; anterior incision extending slightly more basad than gonopore.

REMARKS. This species is similar to *musaeus* from the Philippines but differs in having the pygophore processes strongly arched with the subapical spur closer to the apex and on the lateral rather than the mesal margin, the aedeagus more slender and without posterior tubercles and the subapical expansion on the style serrate rather than smoothly rounded.

MATERIAL EXAMINED

Holotype ♂, **Philippines**: Mindanao, Misamis Or., Mt Pomalihi, 21 km W. of Gingoog City, 800–1000 m, 9.x.1965 (*H. M. Torrevillas*) (BPBM, Type No. 12,560).

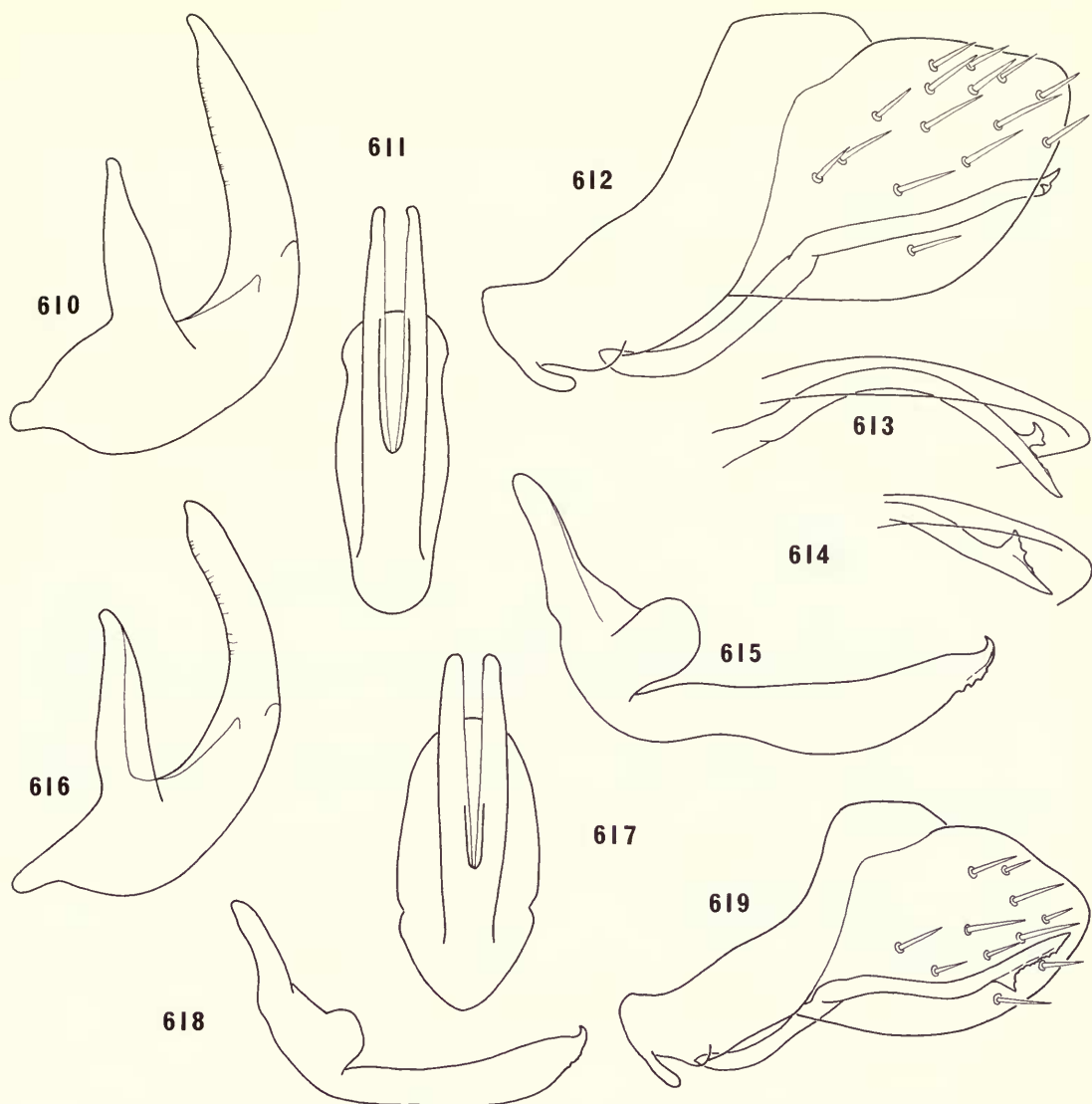
Paratype. **Philippines**: 1 ♂, same data as holotype except 16.x.1965 (BPBM).

***Batracomorphus dardanus* sp. n.**

(Figs 616–619)

Length: ♂, 4.16 mm.

Male genitalia. Pygophore processes slender, directed posteriorly with apical half turned dorsoposteriorly, apex acute, ventral margin keeled and serrate along apical third. Styles with apical process expanded over distal half, tapered to short acute dorsally hooked apex. Aedeagus simple; shaft slender, directed dorsally and curving anterodorsally over distal half; gonopore extending approximately two-thirds length of shaft; anterior incision extending slightly more basad than gonopore.



Figs 610–619 610–615, *Batracomorphus hera*. (610, 611) aedeagus; (612) pygophore; (613) left pygophore lobe and process, ventral view; (614) same; (615) style. 616–619, *B. dardanus*. (616, 617) aedeagus; (618) style; (619) pygophore. (For further explanation see 'Techniques and methods'.)

REMARKS. This species is similar to *ceres* from New Guinea but has the aedeagus more slender, the style more robust and the pygophore processes turned more abruptly dorsad.

MATERIAL EXAMINED

Holotype ♂, **New Britain**: Gazelle Peninsula, Mt Sinewit, 900 m, 13.xi.1962 (*J. Sedlacek*) (BPBM, Type No. 12,561).

***Batracomorphus aeneas* sp. n.**

(Figs 620–624)

Length: ♂, 4.16 mm.

Male genitalia. Pygophore processes slender, directed posteriorly, curving posteromesally immediately distad of midlength then abruptly laterally, apex acute, an acute posteriorly directed spur-like projection

on mesal margin at base of distal laterally directed section. Styles with apical process slender, slightly expanded over distal half, abruptly narrowed subapically to short acute dorsally hooked apex. Aedeagus simple; shaft directed dorsally, tapering to apex in lateral aspect; gonopore and anterior incision extending to just basad of midlength of shaft.

REMARKS. This species is similar to *orion* from the Philippines but differs in having a relatively shorter gonopore and anterior incision, a more slender style and the pygophore processes straight rather than arched in lateral aspect. It also resembles *tatius* from the Bismark Archipelago but lacks dark brown spots on the forewings and a subapical expansion on the style.

MATERIAL EXAMINED

Holotype ♂, **New Guinea**: Papua New Guinea, Madang District, Finisterre Mts, Damanti, 1082 m, 2-11.x.1964 (*M. E. Bacchus*) (BMNH).

***Batracomorpus orion* sp. n.**

(Figs 625-629)

Length: ♂, 4.40-4.64 mm (mean 4.49 mm).

Male genitalia. Pygophore processes slender, directed posteriorly and slightly arched over distal half in lateral aspect, curving posteromesally at midlength then abruptly laterally, apex acute, an acute posteriorly directed spur-like projection on mesal margin at base of laterally directed apical section. Styles with apical process expanded over distal half, tapering to short acute dorsally hooked apex. Aedeagus simple; shaft directed dorsally and curving slightly anterodorsally, tapering to apex distally in lateral aspect; gonopore extending approximately three-fourths length of shaft; anterior incision extending slightly more basad than gonopore.

REMARKS. This species is similar to *aeneas* from New Guinea but differs in having a relatively longer gonopore and anterior incision, a more robust style and the pygophore processes slightly arched in lateral aspect.

MATERIAL EXAMINED

Holotype ♂, **Philippines**: Luzon, Ifugao Province, Liwo, 8 km E. of Mayoyao, 1000-1300 m, 2-6.vi.1967 (*H. M. Torrevillas*) (BPBM, Type No. 12,562).

Paratypes. **Philippines**: 5 ♂, 2 ♀, Luzon and Negros (BPBM).

***Batracomorpus tatius* sp. n.**

(Figs 630-634)

Length: ♂, 4.64-5.04 mm (mean 4.88 mm).

Forewings sparsely speckled with small variably sized dark brown spots.

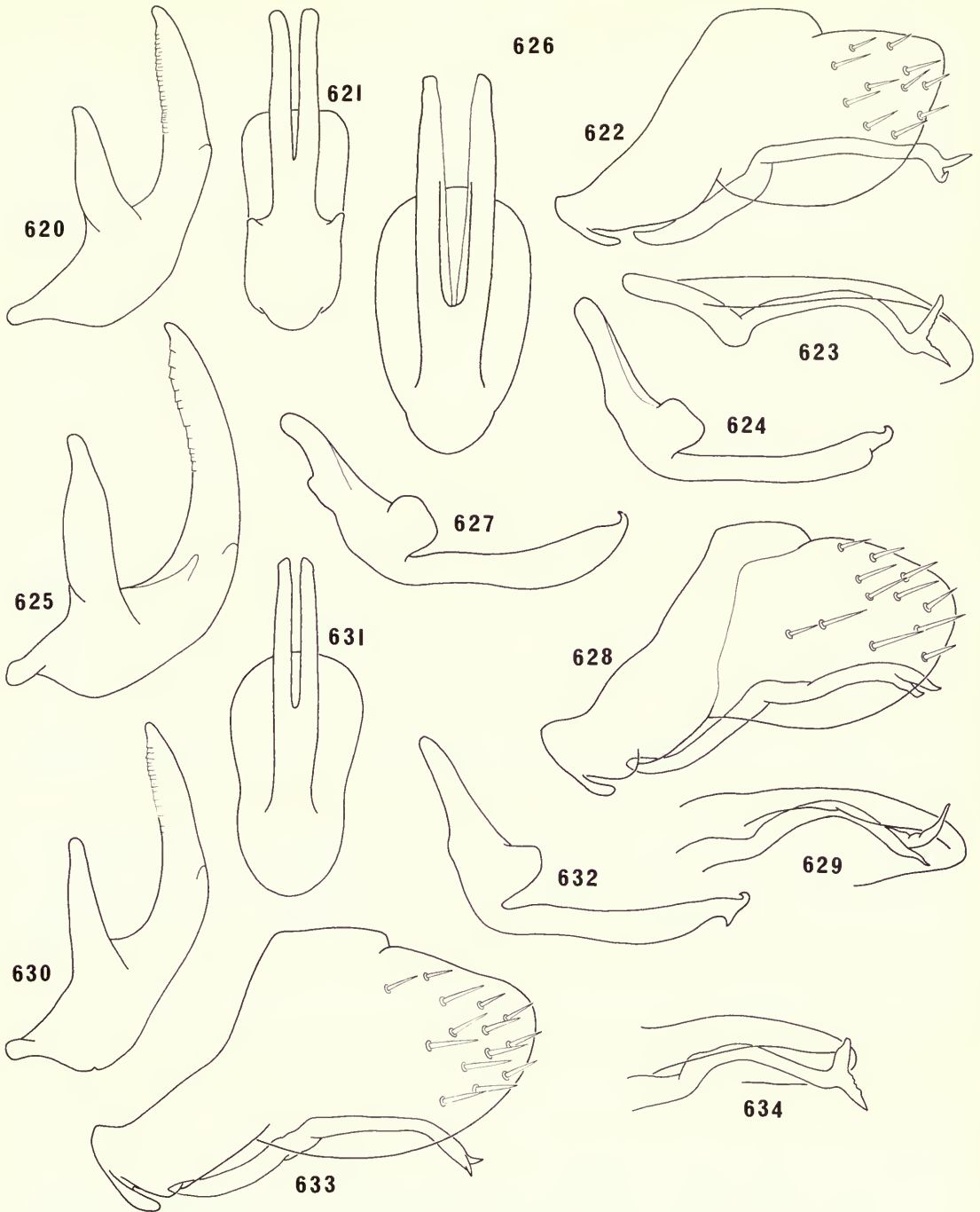
Male genitalia. Pygophore processes slender, directed posteriorly with distal third turned postero-ventrally, curving posteromesally at midlength and abruptly laterally near apex, an acute posteromesally directed spur-like projection on mesal margin near base of laterally directed section. Styles with apical process slender, slightly expanded immediately distad of midlength and tapering to short acute dorsally hooked apex; a small triangular expansion subapically on ventral margin. Aedeagus simple; shaft directed dorsally and turned slightly anterodorsally at midlength, tapering to apex distally in lateral aspect; gonopore and anterior incision extending to approximately midlength of shaft.

REMARKS. This species is similar to *aeneas* from New Guinea but has dark brown spots on the forewings, and the apical process of the style more gradually tapered and with a subapical expansion on the ventral margin.

MATERIAL EXAMINED

Holotype ♂, **New Ireland**: Lemkamin, 7.iv.1962 (ZM).

Paratypes. **New Britain**: 3 ♂, 1 ♀ (BPBM). **New Ireland**: 2 ♂ (BMNH, ZM).



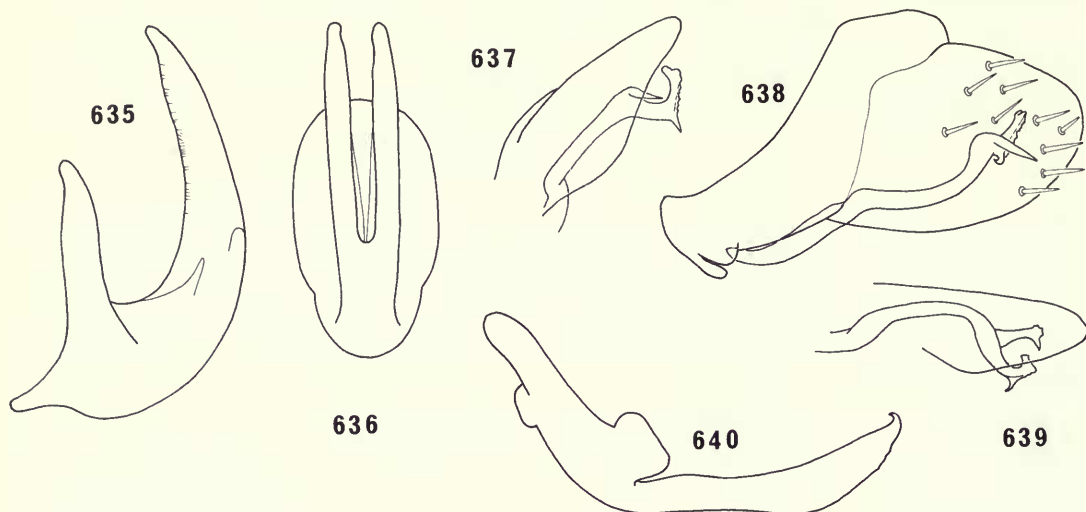
Figs 620–634 620–624, *Batracomorphus aeneus*. (620, 621) aedeagus; (622) pygophore; (623) left pygophore lobe and process, ventral view; (624) style. 625–629, *B. orion*. (625, 626) aedeagus; (627) style; (628) pygophore; (629) left pygophore lobe and process, ventral view. 630–634, *B. tatius*. (630, 631) aedeagus; (632) style; (633) pygophore; (634) left pygophore lobe and process, ventral view. (For further explanation see 'Techniques and methods'.)

***Batracomorphus dido* sp. n.**

(Figs 635–640)

Length: ♂, 4.40 mm.

Male genitalia. Pygophore processes slender, directed posteriorly to midlength then turned dorsally and bifurcating into a short posteriorly directed spatulate branch, its apex slightly expanded and truncate, and a longer medially directed branch turned dorsad at its midlength and becoming spatulate, its apex slightly expanded and truncate, a short spur-like projection on ventral margin of medially directed branch at its midlength. Styles with apical process expanded over distal half, tapering to short acute dorsally hooked apex. Aedeagus simple; shaft directed dorsally, curving anterodorsally from midlength, tapering to apex in lateral aspect; gonopore extending approximately two-thirds length of shaft; anterior incision extending slightly more basad than gonopore.



Figs 635–640 *Batracomorphus dido*. 635, 636, aedeagus; 637, left pygophore lobe and process, postero-lateral view; 638, pygophore; 639, left pygophore lobe and process, ventral view; 640, style. (For further explanation see 'Techniques and methods'.)

REMARKS. This species is superficially similar to *itys* from Sumatra, West Malaysia and the Philippines in the shape of the pygophore processes but differs markedly in the shape of the aedeagus and style. It is perhaps most closely related to *orion* from the Philippines but differs in the orientation of the pygophore processes as well as the spatulate expansion of its apical branches.

MATERIAL EXAMINED

Holotype ♂, **Philippines**: Palawan, Mantalingajan, Pinigisan, 600 m, 10.ix.1961 (ZM).

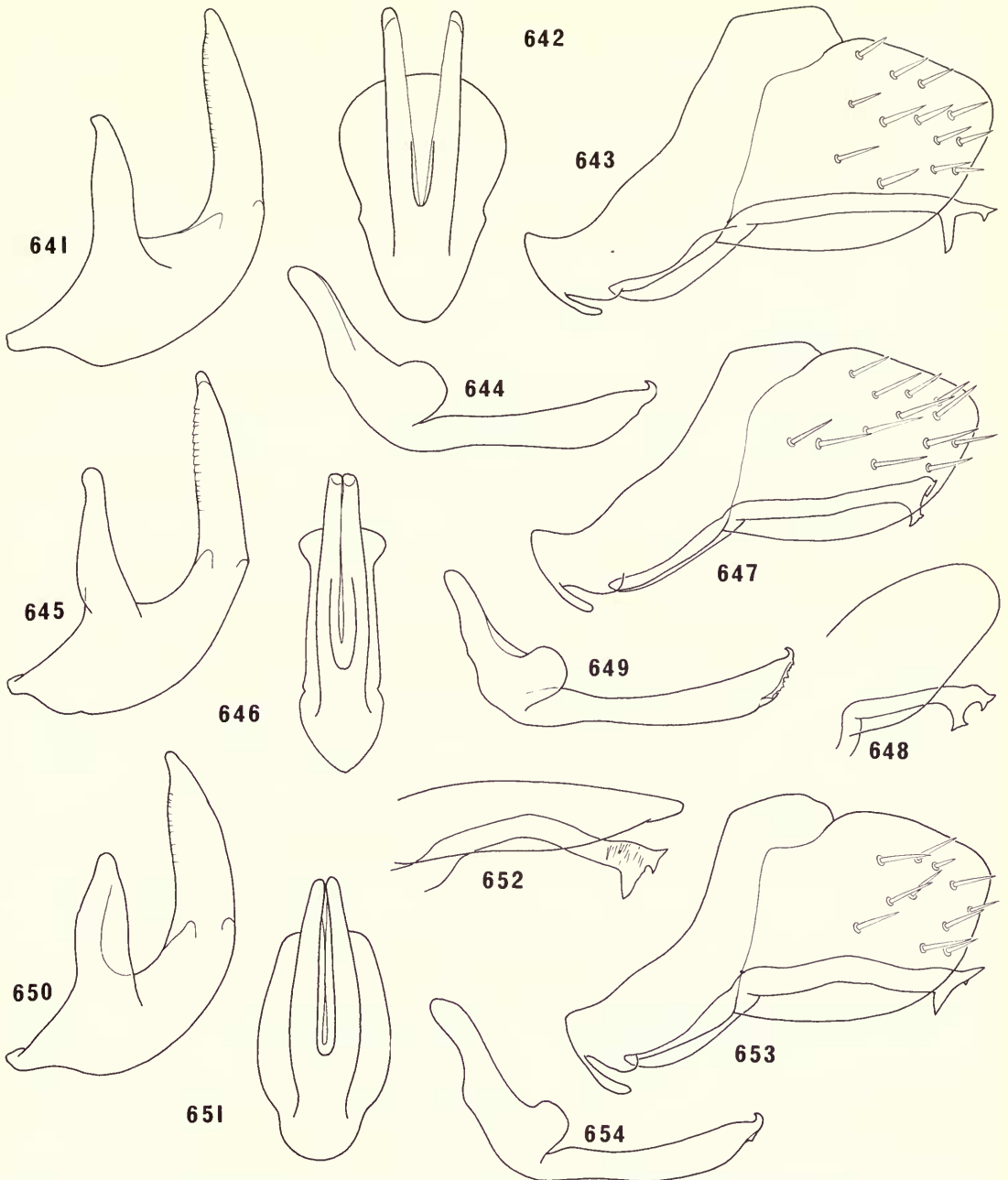
***Batracomorphus molus* sp. n.**

(Figs 641–644)

Length: ♂, 4.24–4.40 mm (mean 4.32 mm).

Pronotum and anterior half of scutellum brown speckled with small dark brown spots; clypellus, lora, gena, apex of forewings, patch on claval commissure immediately distad of midlength and anterior end of appendix, dark brown.

Male genitalia. Pygophore processes slender, directed posteriorly, apex bifurcate with branches of equal length, lower branch acute and directed ventrally, upper branch weakly bifurcate and directed posteriorly. Styles with apical process expanded over distal half, tapering to short acute dorsally hooked apex. Aedeagus simple; shaft directed dorsally, tapering to apex distally; gonopore extending approximately three-fourths length of shaft; anterior incision extending slightly more basad than gonopore.



Figs 641–654 641–644, *Batracomorphus molus*. (641, 642) aedeagus; (643) pygophore; (644) style. 645–649, *B. pyrhus*. (645, 646) aedeagus; (647) pygophore; (648) left pygophore lobe and process, posterolateral view; (649) style. 650–654, *B. eriphyle*. (650, 651) aedeagus; (652) left pygophore lobe and process, ventrolateral view; (653) pygophore; (654) style. (For further explanation see 'Techniques and methods'.)

REMARKS. This species is closely related to *pyrhus* and *eriphyle* from New Guinea but differs from both in the relative length, shape and orientation of the apical branches of the pygophore processes, and in coloration.

MATERIAL EXAMINED

Holotype ♂, **New Guinea**: Papua New Guinea, Madang District, Finisterre Mts, Damanti, 1082 m, 2-11.x.1964 (*M. E. Bacchus*) (BMNH).

Paratype: **New Guinea**: 1 ♂, Irian Jaya (USNM).

***Batracomorphus pyrrhus* sp. n.**

(Figs 645-649)

Length: ♂, 4.72 mm.

Male genitalia. Pygophore processes slender, directed posteriorly, apex bifurcate with branches short, weakly bifurcate and of approximately equal length, the upper one turned medially and the lower one ventrally. Styles with apical process expanded over distal half and tapering to short acute dorsally hooked apex; ventrolateral margin acutely ridged and weakly serrate subapically. Aedeagus simple; shaft directed dorsally, tapering to apex in lateral aspect; gonopore and anterior incision of approximately equal length, extending approximately three-fourths length of shaft.

REMARKS. This species is closely related to *molus* and *eriphyle* from New Guinea but differs from both species in the relative length and shape of the apical branches of the pygophore processes, the subapical serrations on the style and in coloration.

MATERIAL EXAMINED

Holotype ♂, **New Guinea**: Papua New Guinea, Mafulu, 1220 m, xii.1933 (*L. E. Cheesman*) (BMNH).

***Batracomorphus eriphyle* sp. n.**

(Figs 650-654)

Length: ♂, 4.24 mm.

Forewings speckled with small dark brown spots.

Male genitalia. Pygophore processes robust, directed posteriorly, apex bifurcate with branches short, one robust acute and directed ventrally and the other much shorter, mildly bifurcate and directed posteriorly. Styles with apical process expanded over distal half and tapering to short acute dorsally hooked apex; a very small subapical projection sometimes present on ventral margin. Aedeagus simple; shaft directed dorsally, tapering to apex in lateral aspect; gonopore and anterior incision equal in length, extending approximately three-fourths length of shaft.

REMARKS. The subapical projection on the ventral margin of the style, illustrated for the left style of the holotype (Fig. 654), is absent on the right style. This species is closely related to *molus* and *pyrrhus* from New Guinea but differs from both in having a more robust aedeagus and pygophore processes and in coloration.

MATERIAL EXAMINED

Holotype ♂, **New Guinea**: Papua New Guinea, Madang District, Finisterre Mts, Moro, 1692 m, 30.x-15.xi.1964 (*M. E. Bacchus*) (BMNH).

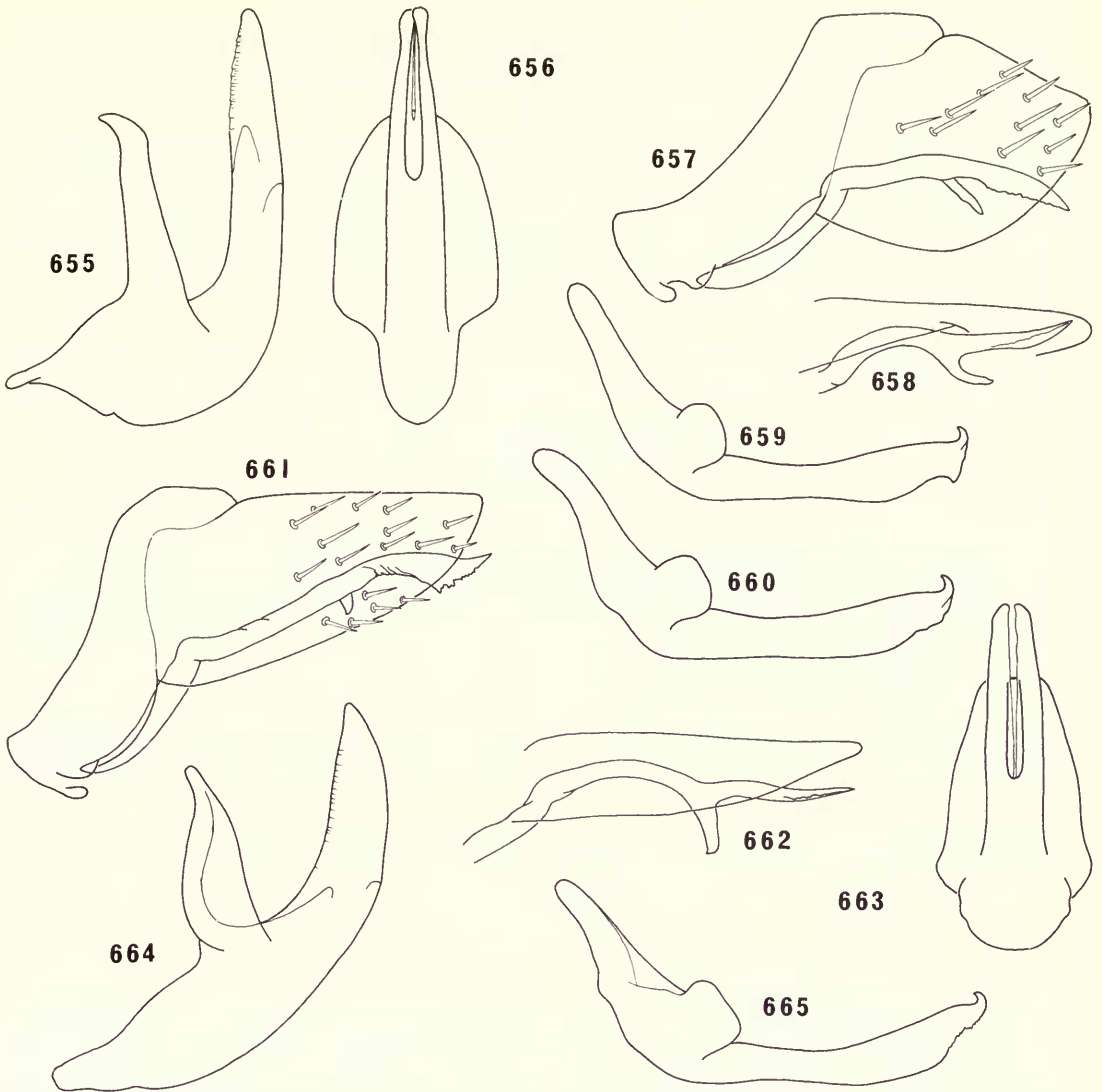
***Batracomorphus hesperides* sp. n.**

(Figs 655-660)

Length: ♂, 4.48-4.72 mm (mean 4.60 mm).

Male genitalia. Pygophore processes stout, directed posteriorly, curving slightly ventroposteriorly over distal half, apex acute; a relatively short, finger-like process at midlength on mesal margin, directed posteromesally, sometimes more mesally or more ventrally; ventral margin distad of midlength acutely ridged and slightly serrate. Styles with apical process expanded over distal half, tapering to short acute dorsally hooked apex; a triangular lamellate expansion subapically on ventral margin, rarely reduced. Aedeagus simple; shaft slender, directed dorsally; gonopore extending to midlength of shaft; anterior incision extending approximately one-third length of shaft.

REMARKS. This species is similar to *eryx* from New Guinea but differs in having more robust pygophore processes, a more gradually tapered style and the relative lengths of the gonopore and anterior incision. It also differs from *eryx* in the absence of dark brown spots on the dorsum.



Figs 655–665 655–660, *Batracomorphus hesperides*. (655, 656) aedeagus; (657) pygophore; (658) left pygophore lobe and process, ventral view; (659) style (Borneo); (660) same (Philippines). 661–665, *B. notulatus* (holotype). (661) pygophore; (662) left pygophore lobe and process, ventral view; (663, 664) aedeagus; (665) style. (For further explanation see 'Techniques and methods'.)

MATERIAL EXAMINED

Holotype ♂, **Borneo**: Sabah, Tawau, Quoin Hill, 15–20.vii.1962 (*Y. Hirashima*) (BPBM, Type No. 12,563).

Paratypes. **Borneo**: 52 ♂, Sabah (BPBM). **Philippines**: 2 ♂, 1 ♀, Mindanao and Palawan (BPBM, ZM).

***Batracomorphus notulatus* Blöte**

(Figs 661–665)

Batrachomorphus notulatus Blöte, 1964: 469. Holotype ♂, NEW GUINEA (RNH) [examined].

Length: ♂, 5.75 mm.

Forewings paler than body and speckled with small dark brown spots.

Male genitalia. Pygophore processes slender, directed dorsoposteriorly and turned posteriorly distally,

expanded slightly subapically with ventral margin acutely ridged and serrate, apex acute; a strong spur-like projection on mesal surface just distad of midlength directed ventromesally. Styles with apical process expanded over distal half, tapering to short acute dorsally hooked apex. Aedeagus simple; shaft directed dorsally, tapering to apex distally; gonopore extending approximately two-thirds length of shaft; anterior incision extending slightly more basad than gonopore.

REMARKS. This species is similar to *hesperides* from Borneo and the Philippines but differs in having the pygophore more elongate with the processes more expanded subapically and directed more dorsally, the style devoid of a subapical expansion and the aedeagus more robust and rounded basally and differing in the relative lengths of the gonopore and anterior incision. The present species is also larger and has dark brown spots on the forewings.

DISTRIBUTION. New Guinea.

MATERIAL EXAMINED

Batrachomorphus notulatus Blöte, holotype ♂, New Guinea: Paniai, 27.viii.1939 (RNH).

***Batrachomorphus turnus* sp. n.**

(Figs 666–669)

Length: ♂, 3.92 mm.

Male genitalia. Pygophore processes slender, directed posteriorly, expanding slightly immediately distad of midlength and bifurcating into long posteriorly directed dorsal branch and a much shorter parallel ventral branch, each acute apically, base of dorsal branch weakly sclerotised and appearing banded. Styles with apical process strongly expanded over distal half, tapering to short acute dorsally hooked apex. Aedeagus simple; shaft directed dorsally; gonopore extending to midlength of shaft; anterior incision extending approximately two-thirds length of shaft.

REMARKS. This species is very similar to *thoas*, also from New Guinea, but is much smaller, has the ventral branch of the pygophore process relatively shorter and the dorsal branch banded basally.

MATERIAL EXAMINED

Holotype ♂, New Guinea: Irian Jaya, Hollandia, iii.1945 (*K. L. Knight*) (USNM).

***Batrachomorphus thoas* sp. n.**

(Figs 670–677)

Length: ♂, 4.96–5.44 mm (mean 5.20 mm).

Male genitalia. Pygophore processes slender, directed posteriorly at base with distal half turned slightly ventroposteriorly, bifid apically with dorsal branch longer than ventral, each acute. Styles with apical process expanded over distal half, tapering to short acute dorsally hooked apex, ventral margin acute and sometimes serrate over expanded portion. Aedeagus simple; shaft slender, directed dorsally, straight or slightly recurved anteriorly; gonopore and anterior incision extending to approximately midlength of shaft.

REMARKS. This species is similar to *turnus* from New Guinea but is larger and has the ventral branch of the pygophore process relatively longer and the dorsal branch uniformly sclerotised. It is known only from the north central area of Papua New Guinea.

MATERIAL EXAMINED

Holotype ♂, New Guinea: Papua New Guinea, Madang District, Finisterre Mts, Damanti, 1082 m, 2–11.x.1964 (*M. E. Bacchus*) (BMNH).

Paratype. New Guinea: 1 ♂, Papua New Guinea (FMNH).

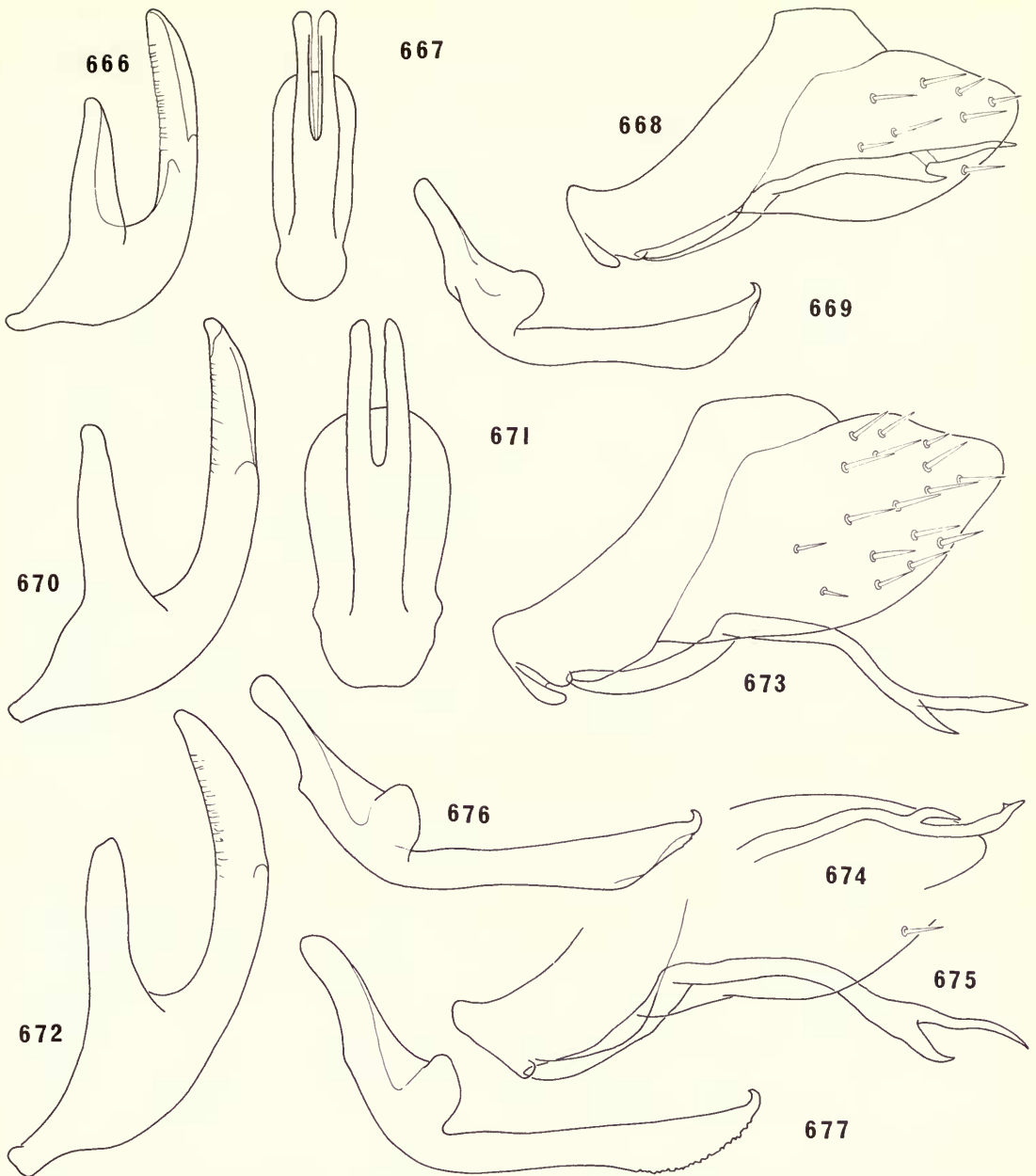
***Batrachomorphus orestes* sp. n.**

(Figs 678–691)

[*Bythoscopus tutuilanus* Osborn 1934a: 166 (partim). ? Misidentification.]

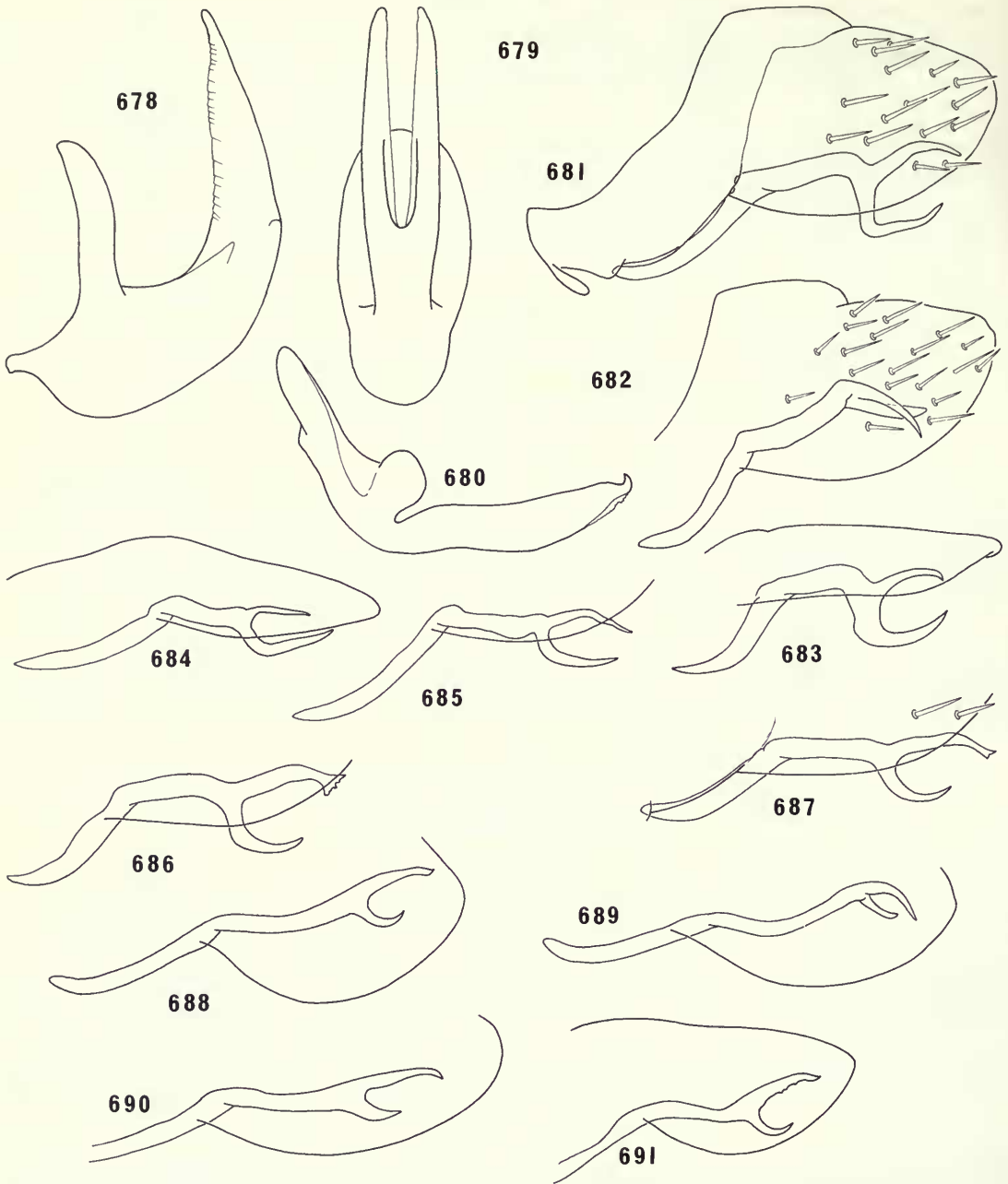
Length: ♂, 4.00–5.60 mm (mean 4.76 mm).

Male genitalia. Pygophore processes slender, directed posteriorly, bifurcating distad of midlength into a dorsal and ventral branch each directed posteriorly and of variable length and shape, their apices acute or



Figs 666–677 666–669, *Batracomorphus turnus*. (666, 667) aedeagus; (668) pygophore; (669) style. 670–677, *B. thoas*. (670, 671) aedeagus (Bulolo, New Guinea); (672) aedeagus (Finisterre Mts, New Guinea); (673) pygophore (Bulolo); (674) left pygophore lobe and process (Bulolo), ventral view; (675) left pygophore process (Finisterre Mts), left lateral view; (676) style (Bulolo); (677) same (Finisterre Mts). (For further explanation see 'Techniques and methods'.)

with dorsal branch sometimes expanded apically, the processes sometimes variably rotated on longitudinal axis so branches in same or near same horizontal plane. Styles with apical processes slightly expanded over distal half and tapering to short acute dorsally hooked apex, ventral margin acuminate and slightly serrate subapically. Aedeagus simple; shaft directed dorsally, tapering to finger-like apex in lateral aspect; gonopore extending approximately two-thirds length of shaft; anterior incision extending slightly more basad than gonopore.



Figs 678–691 *Batracomorphus orestes*. 678, 679, aedeagus; 680, style; 681, pygophore (Ceram); 682, same (Kokoda, New Guinea); 683, left pygophore lobe and process (Kokoda), ventral view; 684, same (Mindanao), ventrolateral view; 685, same (Mindanao), ventrolateral view; 686, same (Humboldt Bay, New Guinea), ventrolateral view; 687, same (Manus Island), left lateral view; 688–690, same (Samoa), left lateral view; 691, same (Samoa), ventrolateral view. (For further explanation see 'Techniques and methods'.)

REMARKS. This species, which extends from the Philippines to Samoa, is variable in the relative size and shape of the apical branches of the pygophore processes. In the Ceram and Australian (Queensland) specimens the branches are widely separated with the ventral branch slightly

longer than the dorsal and strongly angulate just basad of its midlength. In contrast, the specimen from Manus in the Bismark Archipelago has the branches closer together with the ventral one shorter than the dorsal and broadly curved rather than angulate, a development which is continued in Samoa where the ventral branch is relatively much shorter and the bifurcation situated closer to the apex of the process which is itself less robust. At the western end of the range in the Philippines the branches are again closer together than in Ceram and Queensland but with the ventral one longer or equal in length to the dorsal branch. The forms present in New Guinea are intermediate between those in Ceram and Manus. In addition to the variability in the male genitalia, the populations at the western and eastern extremities of the range also differ slightly in size and colour from those in the middle of the range. Specimens from both the Philippines and Samoa are noticeably larger than other specimens whilst in the Philippines the pronotum and forewings have small dark brown spots. Amongst the Samoan specimens one differed from normal in having a dark brown face and irregular dark brown markings on the anterior and lateral margins of the pronotum.

This species is similar to *turnus* and *thoas*, both from New Guinea, in having bifurcate pygophore processes but differs in having the branches relatively long and of more equal length over the major part of its range. The Samoan populations of the present species are most similar to *turnus* and *thoas* but *orestes* is distinguished by its more robust and strongly tapered aedeagus. A specimen of *orestes* was designated by Osborn as a male paratype of his species *Bythoscopus tutuilanus* of which the holotype is a female. In the absence of known characters to correctly associate males and females of this genus *tutuilanus* is treated here as a nomen dubium.

MATERIAL EXAMINED

Holotype ♂, **New Guinea**: Irian Jaya, Humboldt Bay District, Bewani Mts, 400 m, vii.1937 (*W. Stüber*) (BMNH).

Paratypes. **Australia**: 1 ♂ (AMNH). **Ceram**: 2 ♂ (USNM). **Manus**: 1 ♂ (ZM). **New Britain**: 1 ♂ (BPBM). **New Guinea**: 1 ♂, Papua New Guinea (BMNH). **Philippines**: 2 ♂, Mindanao (FMNH). **Samoa**: 11 ♂, 6 ♀, Savaii and Tutuila (BMNH, BPBM).

Batracomorpha proserpine sp. n.

(Figs 692–697)

Length: ♂, 4.16–4.48 mm (mean 4.30 mm).

Forewing punctations usually dark brown.

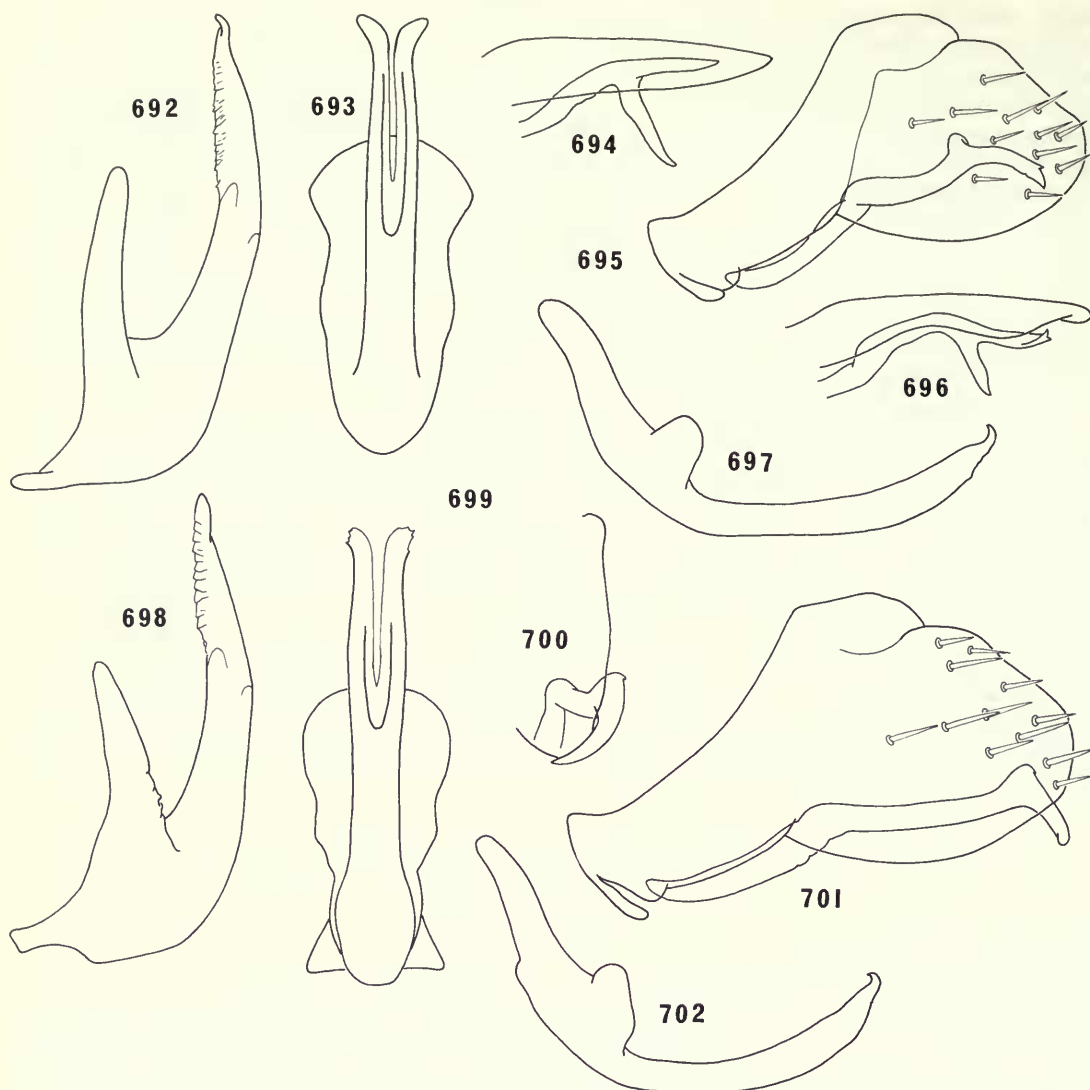
Male genitalia. Pygophore processes directed posteriorly, turned dorsad and bifurcate near midlength with one branch directed posteriorly and the other medially, the posterior branch usually slightly longer than medial, each with apex acute and turned slightly ventrally, the posterior branch with a small spur-like projection sometimes present subapically on dorsal margin. Styles with apical process elongate, slender, of uniform width or only slightly expanded over distal half, curving slightly posterodorsally, tapering distally to short acute dorsally hooked apex. Aedeagus simple; shaft slender, directed dorsally, tapering distally in lateral aspect and terminating in a pair of small laterally diverging lamellate lobes; gonopore extending to just basad of midlength of shaft; anterior incision slightly shorter than gonopore.

REMARKS. This species is one of a group of four closely related species (*proserpine*, *coeus*, *thalia* and *triton*) occurring in Borneo, West Malaysia and Sumatra, characterised by a slender and apically lobed aedeagus, a slender elongate style and pygophore processes that are either bifurcate or a modification thereof. The present species is most closely related to *coeus* from Borneo but differs in having the two branches of the pygophore process well developed and of approximately equal length. The single specimen from West Malaysia has the base of the aedeagus less robust than illustrated and intermediate between the normal shape in *proserpine* and that in *thalia* and *triton*. This specimen also lacks dark brown punctations on the forewings.

MATERIAL EXAMINED

Holotype ♂, **Borneo**: Sabah, Tawau, Quoin Hill, Cocoa Research Station, 25.ix.1962 (*Y. Hirashima*) (BPBM, Type No. 12,564).

Paratypes. **Borneo**: 14 ♂, Sabah (BPBM). **West Malaysia**: 1 ♂ (BMNH).



Figs 692–702 692–697, *Batracomorphus proserpine*. (692, 693) aedeagus; (694) left pygophore lobe and process, ventral view; (695) pygophore; (696) left pygophore lobe and process, ventral view; (697) style. 698–702, *B. coeus*. (698, 699) aedeagus; (700) left pygophore lobe and process, dorsoposterior view; (701) pygophore; (702) style. (For further explanation see ‘Techniques and methods’.)

***Batracomorphus coeus* sp. n.**

(Figs 698–702)

Length: ♂, 4.16–4.48 mm (mean 4.30 mm).

Forewings with very small dark brown spots.

Male genitalia. Pygophore processes slender, directed posteriorly over basal three-fourths then slightly expanded dorsally and turned abruptly ventrolaterally, apex acute, a small spur-like projection on dorsomesal margin of dorsal expansion. Styles with apical process elongate, slender, of uniform width or only slightly expanded over distal half, curving posterodorsally throughout length, tapering distally to short acute dorsally hooked apex. Aedeagus simple; shaft slender, directed dorsally, tapering distally in lateral aspect, lateral margins diverging slightly at apex; gonopore extending to near midlength of shaft; anterior incision slightly shorter than gonopore.

REMARKS. The present species is most closely related to *proserpine* but differs in having the pygophore processes relatively longer, the bifurcation closer to the apex and the mesal branch reduced to a short spur-like projection. (See additional remarks under *proserpine*.)

MATERIAL EXAMINED

Holotype ♂, **Borneo**: Sarawak, foot of Mt Dulit, junction of rivers Tinjar and Lejok, 2.ix.1932 (*B. M. Hobby and A. W. Moore*) (BMNH).

Paratypes. **Borneo**: 21 ♂, Sabah (BPBM).

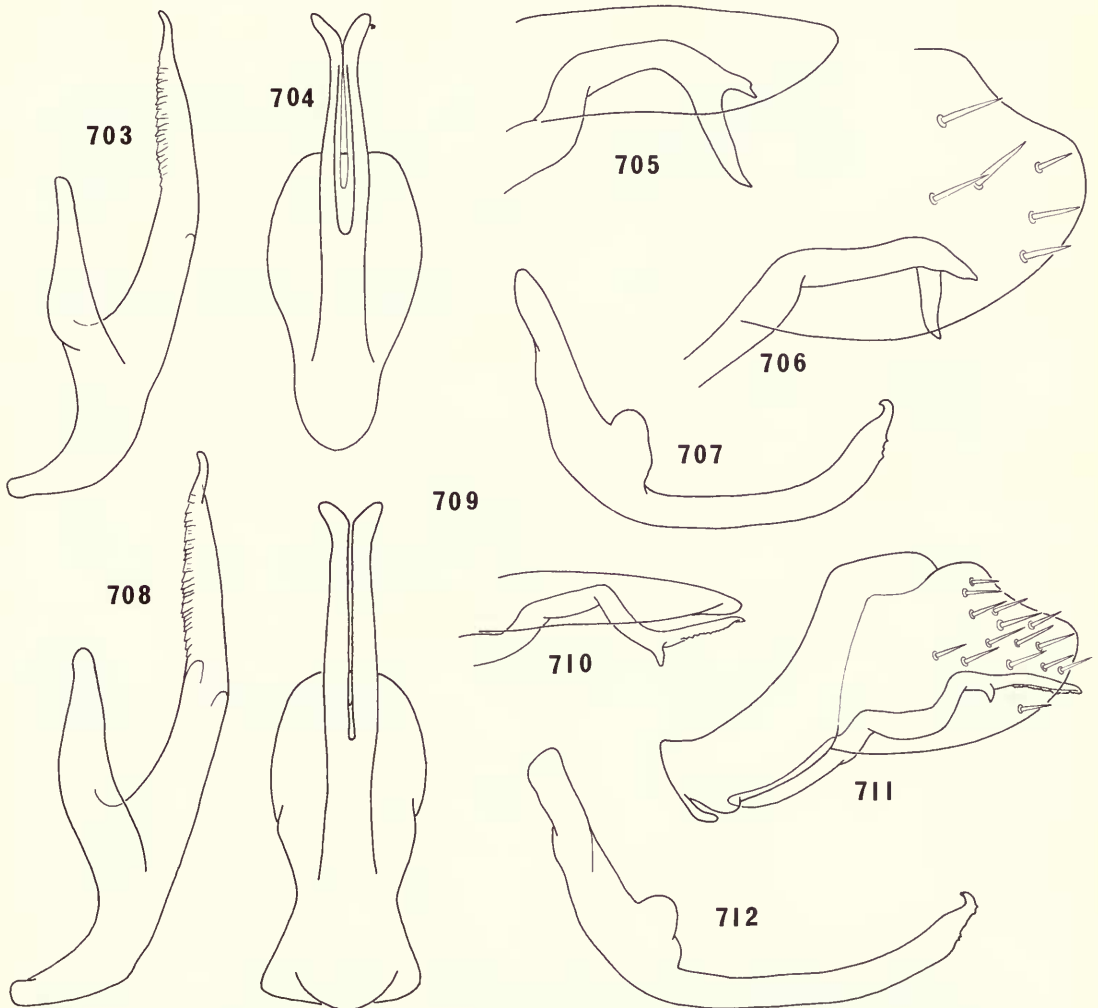
Batracomorphus thalia sp. n.

(Figs 703–707)

Length: ♂, 4.48 mm.

Forewings with small brown tubercles.

Male genitalia. Pygophore processes robust, directed posteriorly to midlength then turned postero-medially and bifurcating into a relatively short posteriorly directed branch and a much longer and more



Figs 703–712 703–707, *Batracomorphus thalia*. (703, 704) aedeagus; (705) left pygophore lobe and process, ventral view; (706) same, left lateral view; (707) style. 708–712, *B. triton*. (708, 709) aedeagus; (710) left pygophore lobe and process, ventral view; (711) pygophore; (712) style. (For further explanation see 'Techniques and methods'.)

robust medially directed branch, each acute apically. Styles with apical process elongate, slender, of uniform width, turned dorsally over distal half, tapering distally to short acute dorsally hooked apex. Aedeagus simple; shaft slender, directed dorsally, tapering to apex over distal half in lateral aspect, terminating in a pair of small laterally diverging lamellate lobes; gonopore extending to near midlength of shaft; anterior incision approximately equal in length to gonopore.

REMARKS. The present species is most closely related to *proserpine* but differs in having more robust pygophore processes with the posteriorly directed branch much smaller than the medial branch, the apical process of the style turned abruptly dorsally near apex and the aedeagus less robust basally. (See additional remarks under *proserpine*.)

MATERIAL EXAMINED

Holotype ♂, **Borneo**: Sarawak, foot of Mt Dulit, junction of rivers Tinjar and Lejok, 2.ix.1932 (*B. M. Hobby and A. W. Moore*) (BMNH).

***Batracomorpus triton* sp. n.**

(Figs 708–712)

Length: ♂, 4.96 mm.

Forewings with small dark brown tubercles.

Male genitalia. Pygophore processes slender, directed posteriorly at base, then abruptly dorsomesally over mid third, then abruptly posteriorly, apex acute, a spur-like projection on ventral margin at proximal end of distal third with ventral margin distal to spur acutely ridged. Styles with apical process elongate, slender, of uniform width, curving dorsally over distal half, tapering distally to short acute dorsally hooked apex. Aedeagus simple; shaft slender, directed dorsally, tapering to apex over distal half in lateral aspect, terminating in a pair of small laterally diverging lamellate lobes; gonopore extending to just basad of midlength of shaft; anterior incision slightly shorter than gonopore.

REMARKS. The present species is most closely related to *thalia* but has more slender pygophore processes with the medial branch reduced and directed ventrally. (See additional remarks under *proserpine*.)

MATERIAL EXAMINED

Holotype ♂, **Sumatra**: Mt Dempo, 1220 m (*C. J. Brooks*) (BMNH).

***Batracomorpus montanus* (Evans) comb. n.**

(Figs 713–720)

Acojassus montanus Evans, 1972: 656. Holotype ♂, NEW GUINEA (BPBM) [examined].

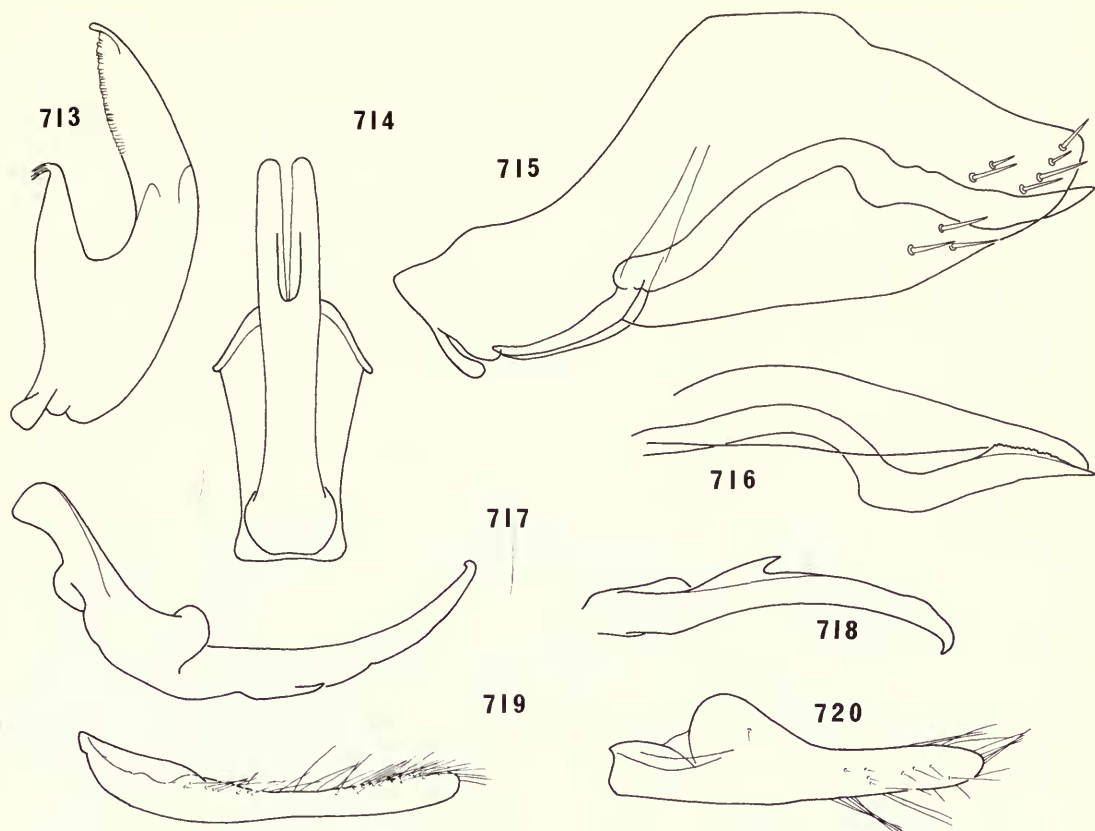
Length: ♂, 9.25 mm.

Forewing punctations whitish.

Vertex slightly longer medially than next eyes, flattened and acutely rounded to face. Pronotum with lateral margins more or less parallel. Forewings with few adventitious cross veins apically.

Male genitalia. Pygophore processes elongate, directed dorsoposteriorly over basal half, curved medially at midlength then abruptly posteriorly, tapered to acute apex with weakly serrate lamellate expansion subapically on lateral margin. Subgenital plates normal in shape, as in *harpago*, but with setae on dorsal surface only, one row along medial edge and another along lateral edge, from basal lobe to apex. Styles with apical process slender, curving dorsoposteriorly, tapering gradually from midlength to short acute dorsally hooked apex; a posteriorly directed thorn-like projection on ventrolateral margin just basad of midlength. Aedeagus simple; shaft directed dorsally, curving anterodorsally from midlength, tapering to apex in lateral aspect; gonopore extending to just basad of midlength of shaft; anterior incision extending slightly more basad than gonopore.

REMARKS. This species is closely related to *leda* from New Guinea but is much larger and with the vertex more acutely rounded to the face. It also has more robust pygophore processes and the gonopore and anterior incision relatively shorter. These two species, together with *viridinervis* and *geryon*, differ from most in that the subgenital plates whilst possessing the usual shape, as in *harpago*, lack the row of setae on the ventral margin. All four species, which occur only in New Guinea, are also distinguished by having the vertex flattened and acutely rounded to the face.



Figs 713–720 *Batracomorphus montanus* (holotype). 713, 714, aedeagus; 715, pygophore; 716, left pygophore lobe and process, ventral view; 717, style; 718, same, ventral view; 719, left subgenital plate, left lateral view; 720, same, ventral view. (For further explanation see 'Techniques and methods'.)

The species *montanus* and *leda* also differ from most by having the vertex slightly longer medially than next to the eyes. The present species shows certain similarities to *ganymede* from New Guinea in the shape of the pygophore processes and aedeagus but *ganymede* has a normal shaped style and subgenital plates as well as being much smaller with a normal shaped vertex.

DISTRIBUTION. New Guinea.

MATERIAL EXAMINED

Acojassus montanus Evans, holotype ♂, New Guinea: Irian Jaya, Wisselmeren: Enarotadi, 1800 m, 3.viii.1955 (*J. L. Gressitt*) (BPBM).

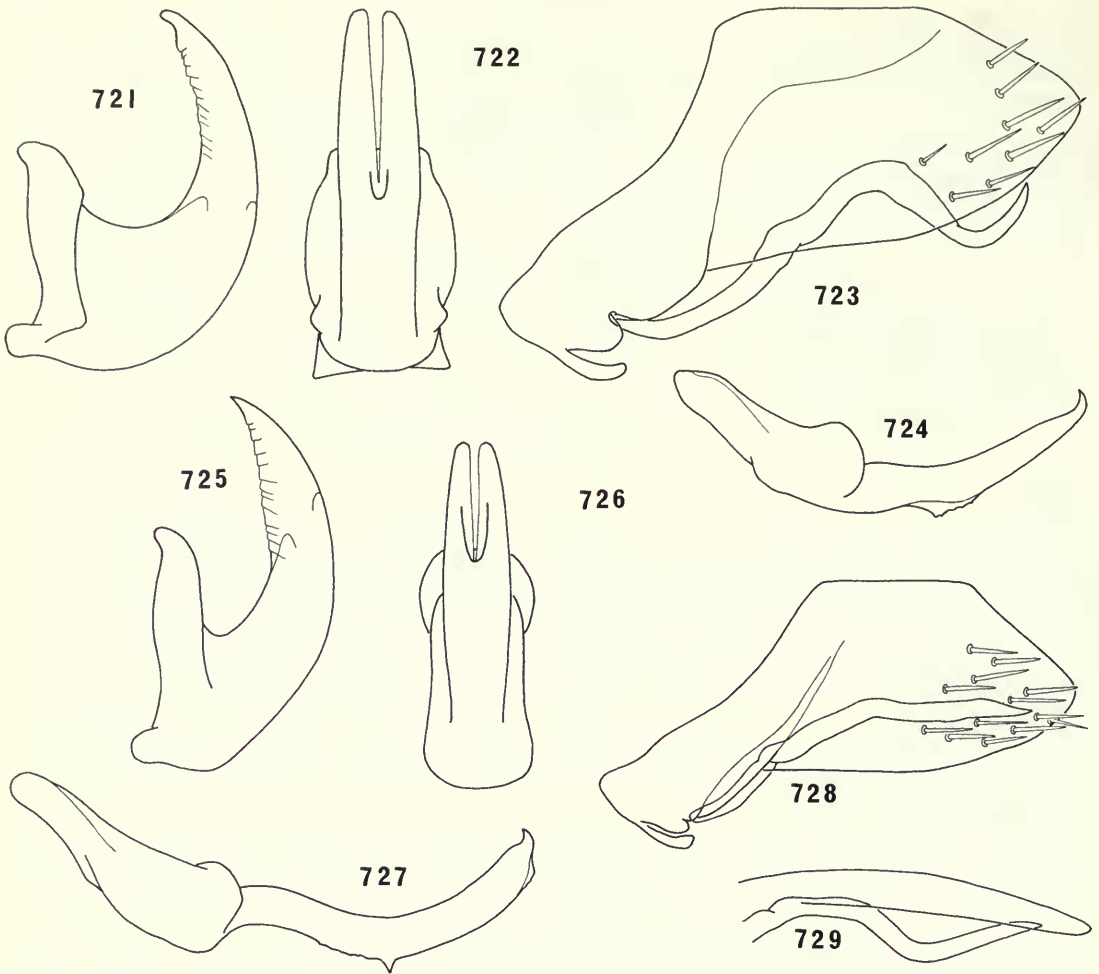
***Batracomorphus leda* sp. n.**

(Figs 721–724)

Length: ♂, 5.36 mm.

Vertex slightly longer medially than next eyes, flattened and acutely rounded to face.

Male genitalia. Pygophore with dorsal surface much longer than normal; processes slender, directed dorsoposteriorly over basal third then abruptly ventroposteriorly for approximately one-third then dorsoposteriorly over distal portion, apex acute. Subgenital plates normal in shape, as in *harpago*, but without ventral row of setae. Styles with apical process slender, curving dorsoposteriorly, tapering gradually from midlength to short acute dorsally hooked apex, ventral margin acutely ridged for short distance immediately basad of midlength. Aedeagus simple; shaft directed dorsally and curving anterodorsally, tapering to short finger-like apex in lateral aspect; gonopore and anterior incision equal in length, extending to near base of shaft.



Figs 721-729 721-724, *Batracomorphus leda*. (721, 722) aedeagus; (723) pygophore; (724) style. 725-729, *B. viridinervis* (holotype). (725, 726) aedeagus; (727) style; (728) pygophore; (729) left pygophore lobe and process, ventral view. (For further explanation see 'Techniques and methods'.)

REMARKS. The present species is most closely related to *montanus* but is smaller and has the vertex less acutely rounded to the face. The pygophore processes are also less robust and the style lacks a thorn-like projection on its ventral margin. (See additional remarks under *montanus*.)

MATERIAL EXAMINED

Holotype ♂, **New Guinea**: Papua New Guinea, Morobe District, Finisterre Mts, Mt Abilala, 2745 m, 19-22.xi.1964 (*M. E. Bacchus*) (BMNH).

***Batracomorphus viridinervis* Blöte**

(Figs 725-729)

Batracomorphus viridinervis Blöte, 1964: 466. Holotype ♂, **NEW GUINEA** (RNH) [examined].

Length: ♂, 6.5 mm.

Vertex flattened.

Male genitalia. Pygophore processes slender, directed dorsoposteriorly at base, then posteromesally and finally posterolaterally, apex acute. Subgenital plates normal in shape, as in *harpago*, but without

ventral row of setae; a multiseriate row of setae dorsally over distal half and a small group on laterodorsal margin of lobe only. Styles with apical process slender, slightly sinuate with distal half curving posterodorsally, of uniform width, tapering subapically to short acute dorsally hooked apex; ventral margin acuminate subapically and with a tooth-like projection at midlength. Aedeagus simple; shaft directed dorsally and curving anterodorsally, tapering to acute apex in lateral aspect; gonopore extending approximately one-third length of shaft; anterior incision extending to near midlength of shaft.

REMARKS. The present species is most closely related to *leda* but is larger and has the vertex of uniform length. The pygophore processes are also less sinuate and the style of uniform width to near the apex. (See additional remarks under *montanus*.)

DISTRIBUTION. New Guinea.

MATERIAL EXAMINED

Batrachomorphus viridinervis Blöte, holotype ♂, New Guinea: Paniai, 16.ix.1939 (RNH).

***Batrachomorphus geryon* sp. n.**

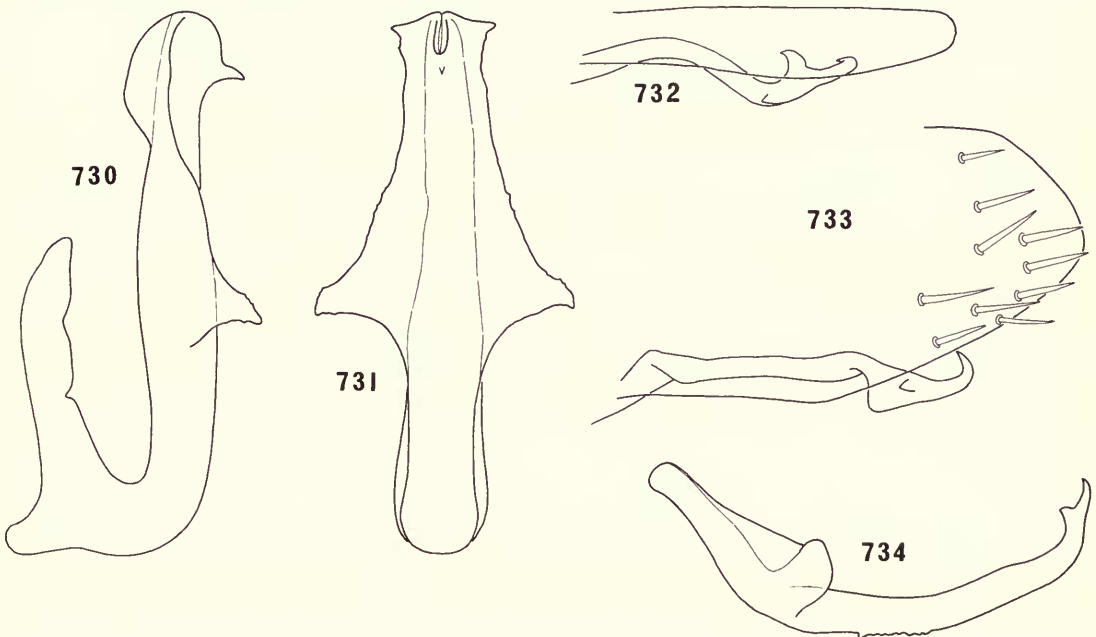
(Figs 730–734)

Length: ♂, 6.00–6.24 mm (mean 6.12 mm).

Vertex flattened with anterior margin slightly ridged and acutely rounded to face.

Male genitalia. Pygophore processes slender, directed posteriorly, expanded foot-like subapically and terminating in acute dorsally curving apex, a short acute projection near midlength of lateral margin of expansion. Subgenital plates normal in shape, as in *harpago*, but with ventral row of hair-like setae at midlength absent. Styles with apical process elongate, slender, of approximately uniform width, apex turned abruptly dorsally, bifid. Aedeagus with shaft slender, directed dorsally; lateral margins expanded fin-like along distal half, turned posterolaterally, increasing in width towards base of shaft and terminating abruptly; anterior margin of shaft expanded at apex into a pair of lobe-like fins extending round apex of shaft and terminating on posterior margin in short medial beak-like process immediately basad of gonopore; gonopore and anterior incision equal in length, very short.

REMARKS. This species, together with *montanus*, *leda* and *viridinervis*, differ from most in the shape of the vertex and subgenital plates, as described for *montanus*. The present species,



Figs 730–734 *Batrachomorphus geryon*. 730, 731, aedeagus; 732, left pygophore lobe and process, ventral view; 733, same, left lateral view; 734, style. (For further explanation see 'Techniques and methods'.)

however, shows no relationship to the others in this group in the shape of the male genitalia. The only species to which it shows any similarity is *ityis* but it is much larger than this species and differs in the shape of the vertex and subgenital plates. It also differs from *ityis* in the actual shape of the aedeagus, styles and pygophore processes.

MATERIAL EXAMINED

Holotype ♂, **New Guinea**: Papua New Guinea, Madang District, Finisterre Mts, Damanti, 1082 m, 2–11.x.1964 (*M. E. Bacchus*) (BMNH).

Paratype. **New Guinea**: 1 ♂, same data as holotype (BMNH).

***Batracomorphus aces* sp. n.**

(Figs 735–740)

Length: ♂, 5.68–5.92 mm (mean 5.84 mm).

Vertex, pronotum, scutellum and forewings sparsely speckled with small dark brown spots.

Vertex flat.

Male genitalia. Pygophore processes elongate, slender, directed posteriorly and curving dorsoposteriorly, vermiculate over distal half, apex acute. Subgenital plates normal in shape, as in *harpago*, but with basal stem expanded laterally and obscuring lobe; long hair-like setae in basal group on dorsolateral margin and along dorsal margin only. Styles with apical process elongate, slender, of approximately uniform width, tapering distally to acute upturned apex. Aedeagus robust, enlarged basally; shaft relatively slender, directed dorsally and recurved anterodorsally; gonopore extending approximately half length of shaft; anterior incision extending approximately one-third length of shaft.

REMARKS. The present species is one of a group of 10 (*aces*, *thetis*, *tityos*, *misenus*, *pustulatus*, *alceus*, *antenor*, *orithyia*, *tereus* and *ufens*) which are characterised by having the vertex flattened, the subgenital plates devoid of hair-like setae on the ventral margin and with the basal lobe obscured by the lateral expansion of the basal stem, the aedeagus enlarged basally and the shaft recurved anteriorly, the apical process of the style elongate and slender with the apex acute and upturned, and the pygophore processes slender. The species in this group, which extends from the Philippines and Borneo across to New Guinea, the Bismark Archipelago and the Solomon Islands, resemble *curvatus* in the basic shape of the aedeagus and style and *ilia*, *sarpedon* and *cocles* in the shape of the pygophore processes but differ from all four in the shape of the vertex and subgenital plates. The present species is most closely related to *thetis* from the Philippines but differs in the shape of the aedeagus which is less robust basally, has a relatively larger and less recurved shaft and a much shorter gonopore.

MATERIAL EXAMINED

Holotype ♂, **New Ireland**: Lemkamin, 17.iv.1962 (ZM).

Paratypes. **New Britain**: 2 ♂ (BPBM).

***Batracomorphus thetis* sp. n.**

(Figs 741–745)

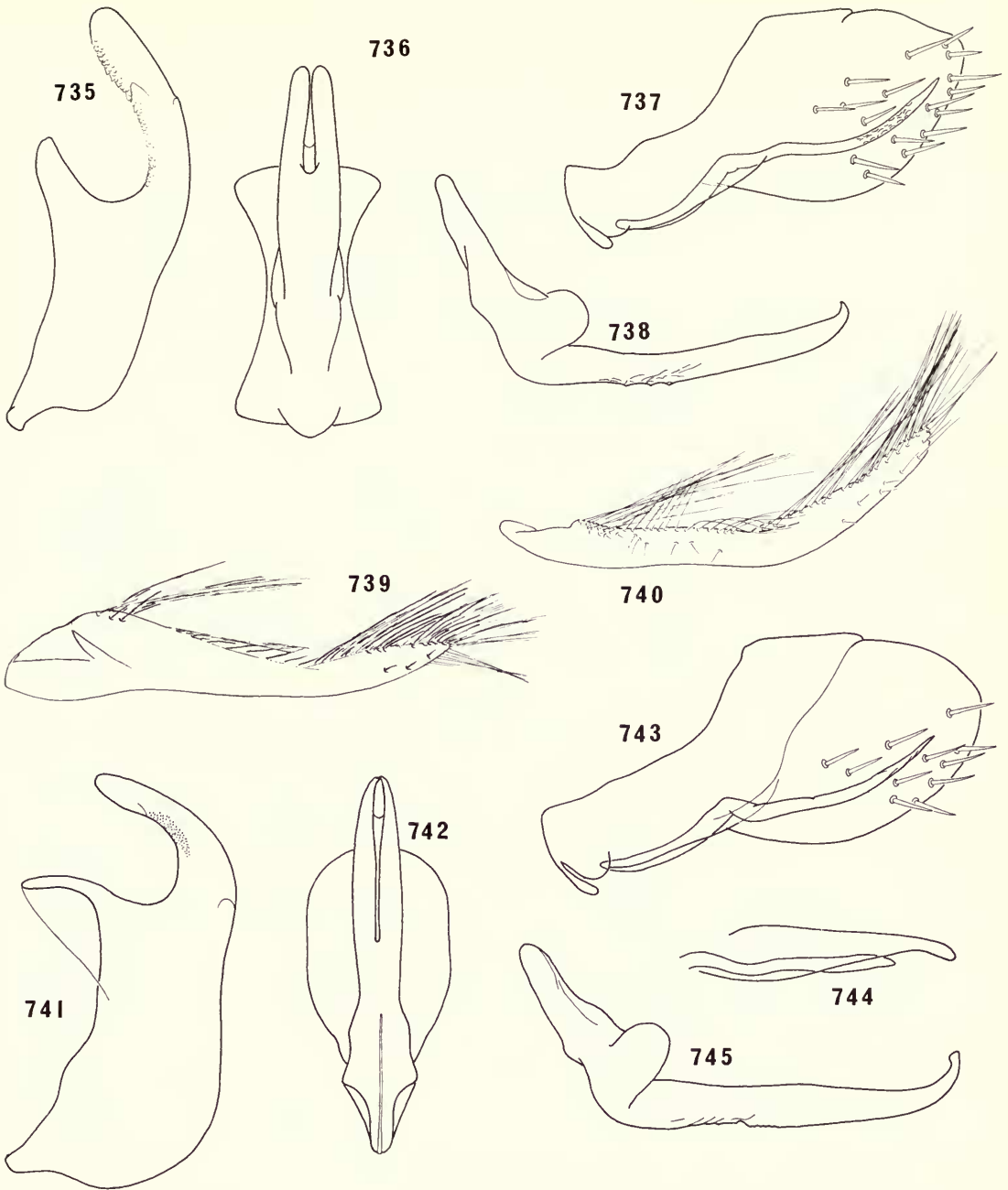
Length: ♂, 5.12–5.92 mm (mean 5.65 mm).

Vertex, pronotum, scutellum and forewings speckled with small dark brown spots.

Vertex flat.

Male genitalia. Pygophore processes slender, directed posteriorly, curving gradually dorsoposteriorly, tapering gradually to slender acute apex in lateral aspect, apical portion slightly spatulate. Subgenital plates as in *aces*. Styles with apical process elongate, slender, tapering gradually over distal half to narrowly rounded upturned apex. Aedeagus robust, strongly enlarged basally; shaft relatively short, slender, directed dorsally then strongly recurved anteriorly; gonopore extending to near base of shaft; anterior incision short.

REMARKS. The present species is most closely related to *tityos* from the Philippines but is smaller, has a more slender shaft to the aedeagus, a relatively longer gonopore and the apical portion of the pygophore process directed posteriorly rather than posterolaterally. (See additional remarks under *aces*.)



Figs 735–745 735–740, *Batracomorphus acestes*. (735, 736) aedeagus; (737) pygophore; (738) style; (739) left subgenital plate, ventral view; (740) same, left lateral view. 741–745, *B. thetis*. (741, 742) aedeagus; (743) pygophore; (744) left pygophore lobe and process, ventral view; (745) style. (For further explanation see 'Techniques and methods'.)

MATERIAL EXAMINED

Holotype ♂, **Philippines**: Luzon, Benguet, Baguio (*Baker*) (USNM).
 Paratypes. **Philippines**: 3 ♂, 2 ♀, Luzon (USNM).

Batracomorphus tityos sp. n.

(Figs 746–750)

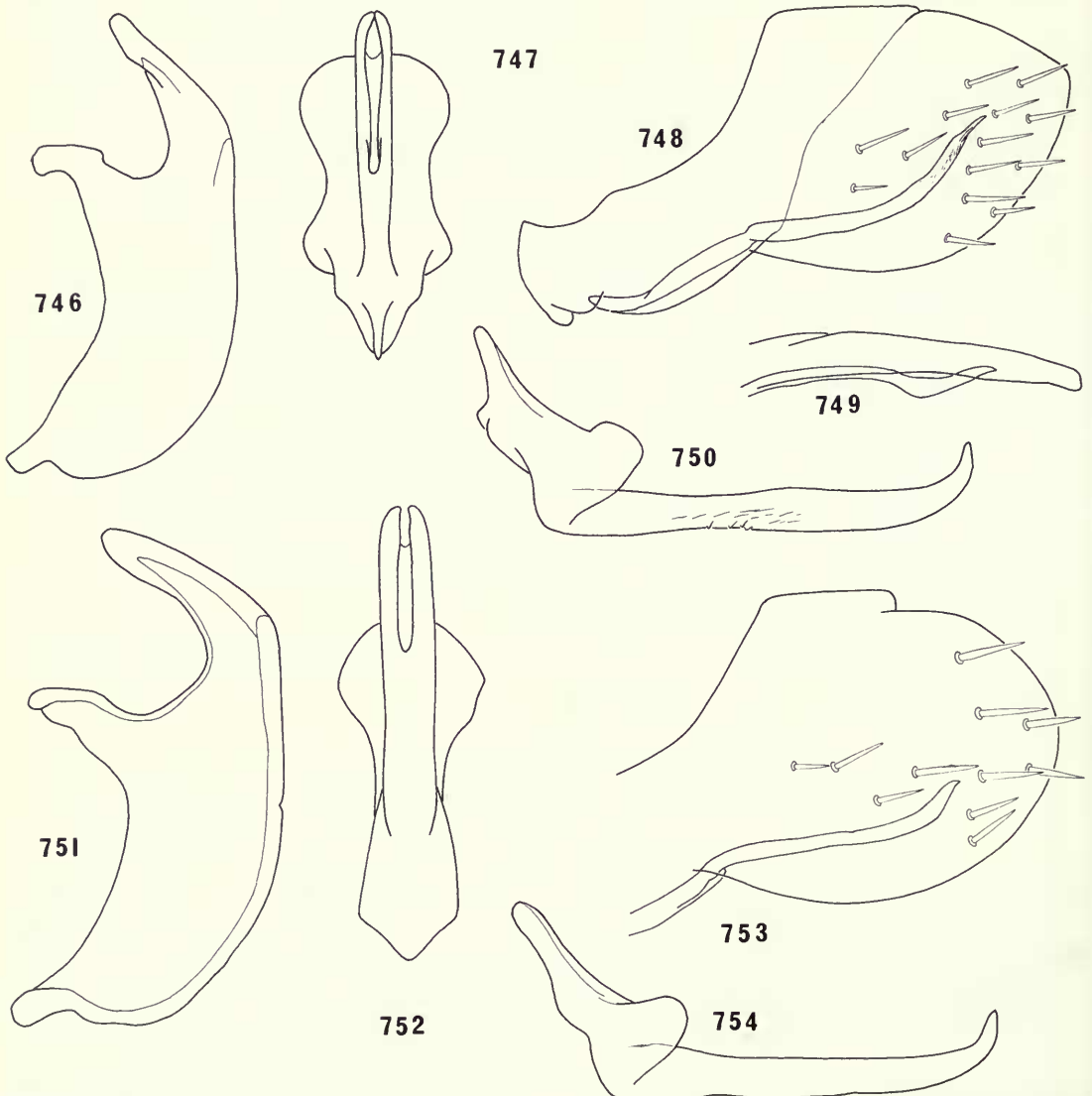
Length: ♂, 6.48 mm.

Vertex, pronotum, scutellum and forewings speckled with small dark brown spots.

Vertex flat.

Male genitalia. Pygophore processes slender, directed posteriorly, turning dorsoposteriorly at mid-length, apical third turned slightly posterolaterally, apex acute. Subgenital plates as in *acestes*. Styles with apical process elongate, slender, of approximately uniform width, tapering distally to acute upturned apex. Aedeagus robust, enlarged basally; shaft relatively short, directed dorsally then curving anterodorsally, tapering to apex with a pair of small lamellate expansions subapically on anterior margin; gonopore extending approximately three-fourths length of shaft; anterior incision short.

REMARKS. The present species is most closely related to *thetis* from the Philippines but is larger



Figs 746–754 746–750, *Batracomorphus tityos*. (746, 747) aedeagus; (748) pygophore; (749) left pygophore lobe and process, ventral view; (750) style. 751–754, *B. misenus*. (751, 752) aedeagus; (753) pygophore; (754) style. (For further explanation see 'Techniques and methods'.)

and has the shaft of the aedeagus more robust, less recurved and with subapical expansions, and the pygophore processes turned more abruptly dorsoposteriorly and with apical third turned slightly posterolaterally. (See additional remarks under *acestes*.)

MATERIAL EXAMINED

Holotype ♂, **Philippines**: Mindanao, Misamis Or., Mt Empagatao, 1050–1200 m, 19–30.iv.1961 (*H. M. Torrevillas*) (BPBM, Type No. 12,565).

***Batracomorphus misenus* sp. n.**

(Figs 751–754)

Length: ♂, 4.88–6.00 mm (mean 5.42 mm).

Vertex, pronotum, scutellum and forewings speckled with small dark brown spots.

Vertex slightly flattened.

Male genitalia. Pygophore processes elongate, slender, directed posteriorly and turned abruptly dorsally subapically, apex acute. Subgenital plates as in *acestes*. Styles with apical process elongate, slender, of approximately uniform width, tapering distally to acute upturned apex. Aedeagus robust, enlarged basally; shaft relatively short, directed dorsally and recurved anteriorly; gonopore extending to near midlength of shaft; anterior incision very short.

REMARKS. The present species is closely related to *tityos* from the Philippines but has the pygophore processes turned dorsad subapically rather than at their midlength and the shaft of the aedeagus more recurved. (See additional remarks under *acestes*.)

MATERIAL EXAMINED

Holotype ♂, **Borneo**: Sarawak, foot of Mt Dulit, junction of rivers Tinjar and Lejok, 29.viii.1932 (*B. M. Hobby & A. W. Moore*) (BMNH).

Paratypes. **Borneo**: 4 ♂, same data as holotype except 27.viii–26.ix.1932 (BMNH).

***Batracomorphus pustulatus* Blöte**

(Figs 755–758)

Batrachomorphus pustulatus Blöte, 1964: 469. Holotype ♂, NEW GUINEA (RNH) [examined]

Length: ♂, 6.00–8.30 mm (mean 7.15 mm).

Vertex, pronotum, scutellum and forewings speckled with small dark brown spots.

Vertex flat.

Male genitalia. Pygophore processes long, slender, directed posteriorly over basal half then turned dorsoposteriorly, apex acute and turned posteriorly, vermiculate over distal half. Subgenital plates as in *acestes*. Styles with apical process elongate, slender, of uniform width, tapering distally to acute upturned apex. Aedeagus robust, enlarged basally; shaft relatively short, directed dorsally and turned anterodorsally at midlength; anterior margin trough-like along its length and with small rounded teeth-like projections; base with posterior margin acutely ridged and keel-like medially; gonopore extending to near midlength of shaft; anterior incision extending approximately one-third length of shaft.

REMARKS. The present species is closely related to *thetis* and *tityos* from the Philippines but has the shaft of the aedeagus less recurved and the gonopore relatively shorter and the pygophore processes longer, turned more abruptly posterodorsally and with the apex turned posteriorly. (See additional remarks under *acestes*.)

DISTRIBUTION. New Britain, New Guinea.

MATERIAL EXAMINED

Batrachomorphus pustulatus Blöte, holotype ♂, **New Guinea**: Paniai, 15.ix.1939 (RNH).

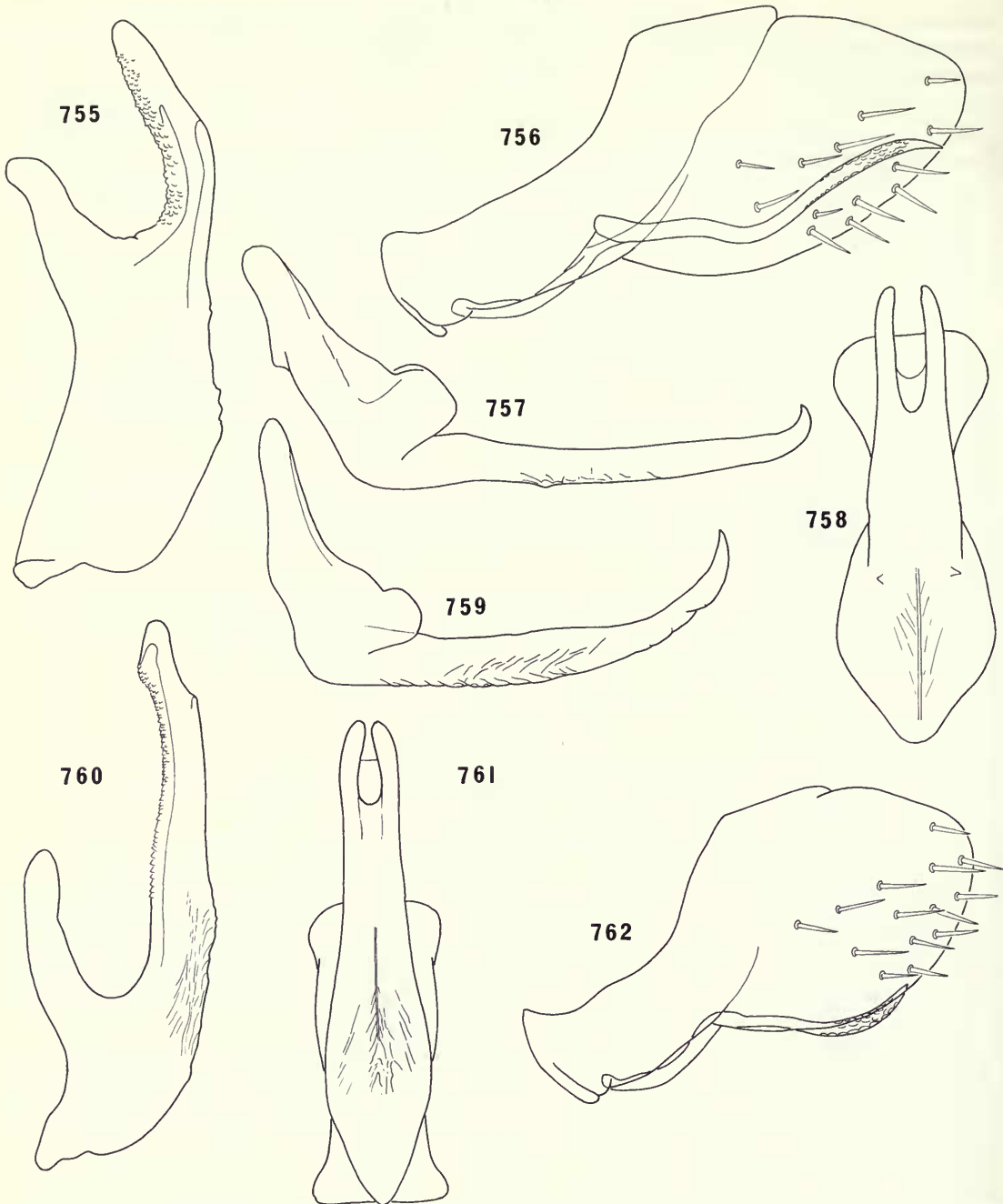
New Guinea: 1 ♂, Irian Jaya (USNM).

***Batracomorphus alceus* sp. n.**

(Figs 759–762)

Length: ♂, 6.72 mm.

Vertex, pronotum, scutellum and forewings sparsely speckled with small dark brown spots.



Figs 755–762 755–758, *Batracomorpha pustulatus* (holotype). (755) aedeagus; (756) pygophore; (757) style; (758) aedeagus. 759–762, *B. alceus*. (759) style; (760, 761) aedeagus; (762) pygophore. (For further explanation see ‘Techniques and methods’.)

Vertex flat; forewing venation normal but with additional costal cross veins adjacent to outer subapical cell.

Male genitalia. Pygophore processes slender, directed posteriorly with distal half vermiculate and curving dorsally, apex acute. Subgenital plates as in *acesites*. Styles with apical process elongate, slender, of uniform width to midlength with distal half curving dorsally and tapering to acute apex. Aedeagus slender,

not enlarged basally; shaft elongate, directed dorsally, posterior margin acutely ridged medially over basal half; gonopore approximately one-fifth length of shaft; anterior incision approximately half length of gonopore.

REMARKS. The present species is one of a group of 10 characterised by the shape of the vertex and male genitalia as described under *acesites*. It differs from all other species in this group in having a slender rather than robust aedeagus, with a dorsally directed rather than recurved shaft, but is closely related to them in the shape of the style, pygophore processes, subgenital plates and vertex.

MATERIAL EXAMINED

Holotype ♂, **New Guinea**: Papua New Guinea, Markham River valley, Nadzab, viii.1944 (*K. V. Krombein*) (USNM).

***Batracomorphus antenor* sp. n.**

(Figs 763–767)

Length: ♂, 5.12–5.20 mm (mean 5.16 mm).

Vertex, pronotum, scutellum and forewings speckled with small dark brown spots.

Vertex flattened.

Male genitalia. Pygophore processes slender, directed mesally then immediately dorsad near base, apex acute. Subgenital plates as in *acesites*. Styles with apical process elongate, of uniform width to near apex then tapering to short, dorsally directed, finger-like apex. Aedeagus robust, enlarged basally; shaft relatively short, directed dorsally and strongly recurved anteriorly; gonopore extending to near base of shaft; anterior incision very short.

REMARKS. The present species is most closely related to *thetis* from the Philippines but differs in having the pygophore processes turned abruptly dorsad at their base. (See additional remarks under *acesites*.)

MATERIAL EXAMINED

Holotype ♂, **New Britain**: Gazelle Peninsula, Mt Sinewit, 900 m, 5–14.xi.1962 (*J. Sedlacek*) (BPBM, Type No. 12,566).

Paratype. **New Britain**: 1 ♂, same data as holotype except 14–16.xi.1962 (BPBM).

***Batracomorphus orithyia* sp. n.**

(Figs 768–772)

Length: ♂, 4.72 mm.

Vertex, pronotum, scutellum and forewings mottled with small dark brown spots.

Vertex flat.

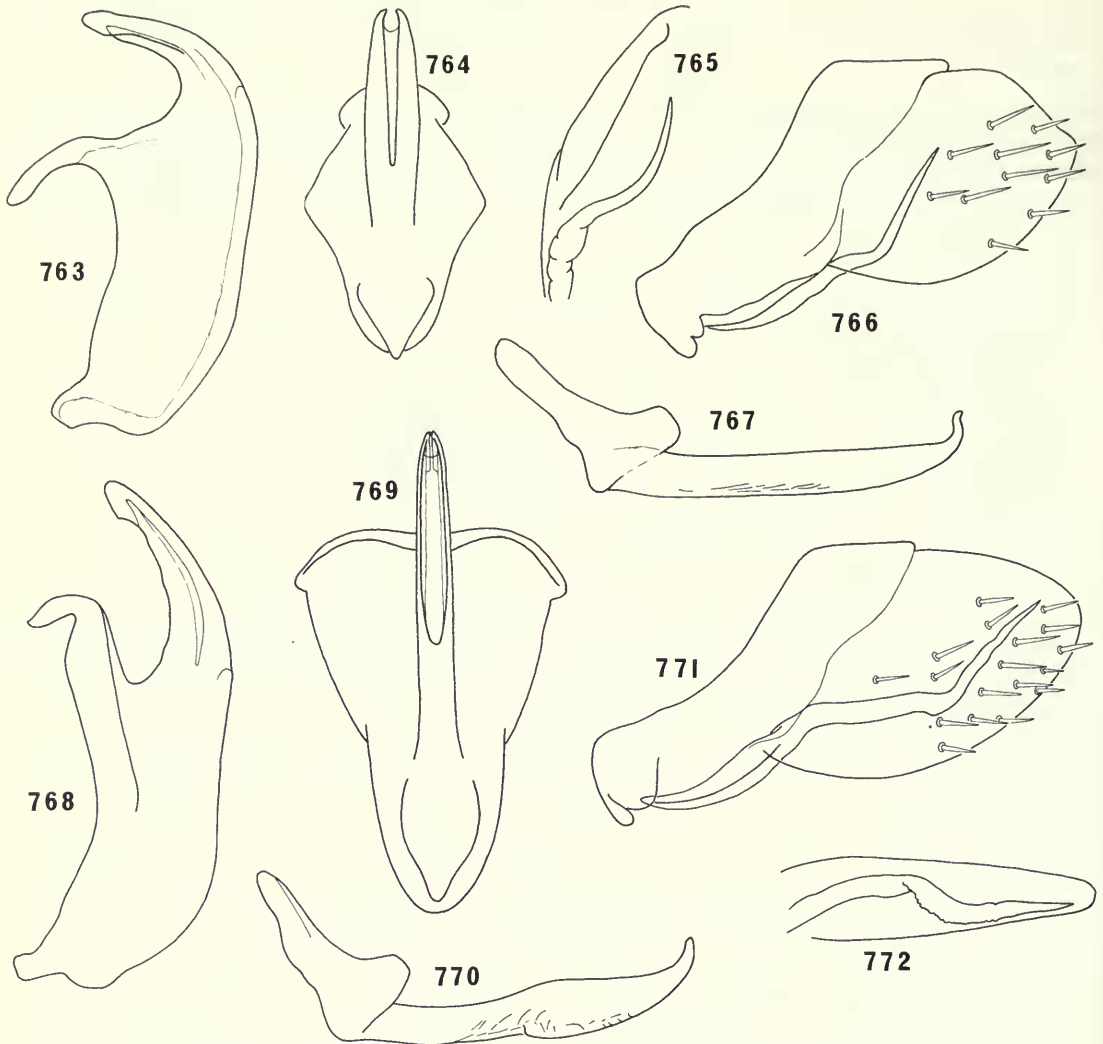
Male genitalia. Pygophore processes slender, directed posteriorly to midlength and then abruptly dorsoposteriorly, apex acute. Subgenital plates as in *acesites*. Styles with apical process elongate, expanded over distal half and then tapering to upturned finger-like apex. Aedeagus robust, enlarged basally; shaft relatively short, directed dorsally and curving anterodorsally; gonopore extending to near base of shaft; anterior incision very short.

REMARKS. The present species is closely related to *antenor* from New Britain but differs in having the shaft of the aedeagus less recurved, the apical process of the style expanded over its distal half and the pygophore processes turned dorsad at their midlength instead of basally. (See additional remarks under *acesites*.)

MATERIAL EXAMINED

Holotype ♂, **New Guinea**: Irian Jaya, Waigeu, Camp Nok, 762 m, v.1938 (*L. E. Cheesman*) (BMNH).

Paratypes. **New Guinea**: 2 ♀, same data as holotype (BMNH).



Figs 763–772 763–767, *Batracomorpha anterior*. (763, 764) aedeagus; (765) left pygophore lobe and process, posterior view; (766) pygophore; (767) style. 768–772, *B. orithyia*. (768, 769) aedeagus; (770) style; (771) pygophore; (772) left pygophore lobe and process, ventroposterior view. (For further explanation see ‘Techniques and methods’.)

***Batracomorpha tereus* sp. n.**

(Figs 773–777)

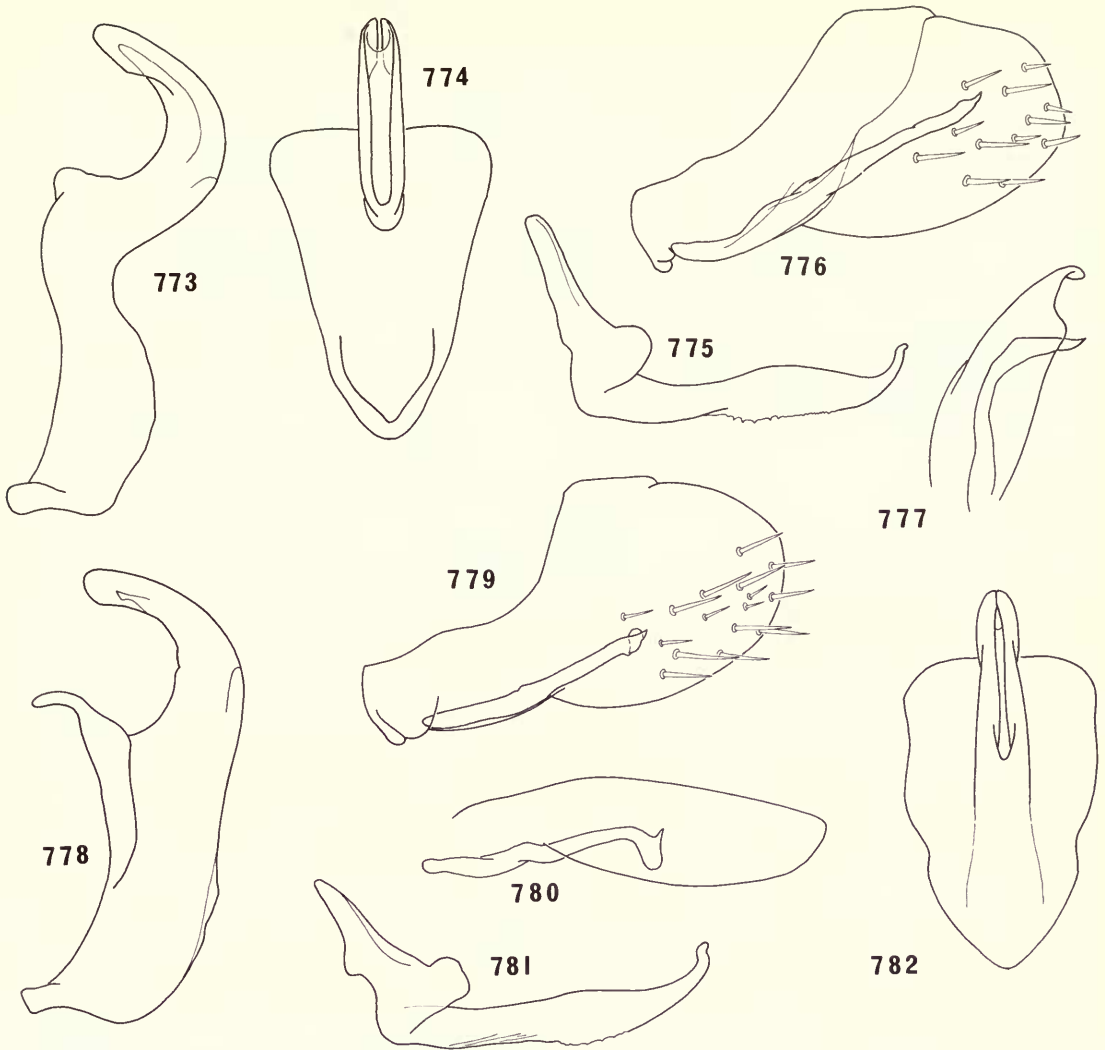
Length: ♂, 4.40–4.88 mm (mean 4.60 mm).

Vertex, pronotum, scutellum and forewings mottled with small dark brown spots.

Vertex flat.

Male genitalia. Pygophore processes slender, directed posteriorly or dorsoposteriorly with apical third turned medially or dorsomesally, apex acute. Subgenital plates as in *aceses*. Styles with apical process elongate, expanded over distal half and tapering to upturned finger-like apex; ventral margin slightly serrate at midlength. Aedeagus robust, base enlarged and strongly concave at junction with shaft; shaft relatively short, directed dorsally and recurved anteriorly; gonopore extending approximately two-thirds length of shaft; anterior incision very short.

REMARKS. The present species is mostly closely related to *ufens* from the Solomon Islands but



Figs 773–782 773–777, *Batracomorphus tereus*. (773, 774) aedeagus; (775) style; (776) pygophore; (777) left pygophore lobe and process, ventroposterior view. 778–782, *B. ufens*. (778) aedeagus; (779) pygophore; (780) left pygophore lobe and process, ventral view; (781) style; (782) aedeagus. (For further explanation see 'Techniques and methods'.)

differs in having the pygophore processes relatively longer and acute apically, the posterior margin of the base of the aedeagus strongly concave and the gonopore relatively longer. (See additional remarks under *acestes*.)

MATERIAL EXAMINED

Holotype ♂, **New Guinea**: Papua New Guinea, Morobe District, Lae, 10.xii.1964 (*M. E. Bacchus*) (BMNH).

Paratypes. **New Britain**: 1 ♂ (BPBM). **New Guinea**: 1 ♂, Irian Jaya (BMNH).

***Batracomorphus ufens* sp. n.**

(Figs 778–782)

Length: ♂, 4.48–5.28 mm (mean 4.84 mm).

Vertex, pronotum, scutellum and forewings speckled with small dark brown spots.

Vertex flat.

Male genitalia. Pygophore processes short, slender, directed dorsoposteriorly with distal third turned mesally or posteromesally, slightly expanded subapically with a small spur-like projection sometimes present on posterior margin, apex rounded. Subgenital plates as in *acestes*. Styles with apical process elongate, expanded over distal half and tapering to upturned finger-like apex; ventral margin acutely ridged and mildly serrate at midlength. Aedeagus robust, enlarged basally; shaft relatively short, directed dorsally and recurved anteriorly; gonopore extending approximately two-thirds length of shaft; anterior incision very short.

REMARKS. The present species is most closely related to *tereus* from New Guinea and New Britain but lacks the basal concavity on the posterior margin of the aedeagus, has a relatively shorter gonopore and pygophore processes with the apex rounded rather than acute. (See additional remarks under *acestes*.)

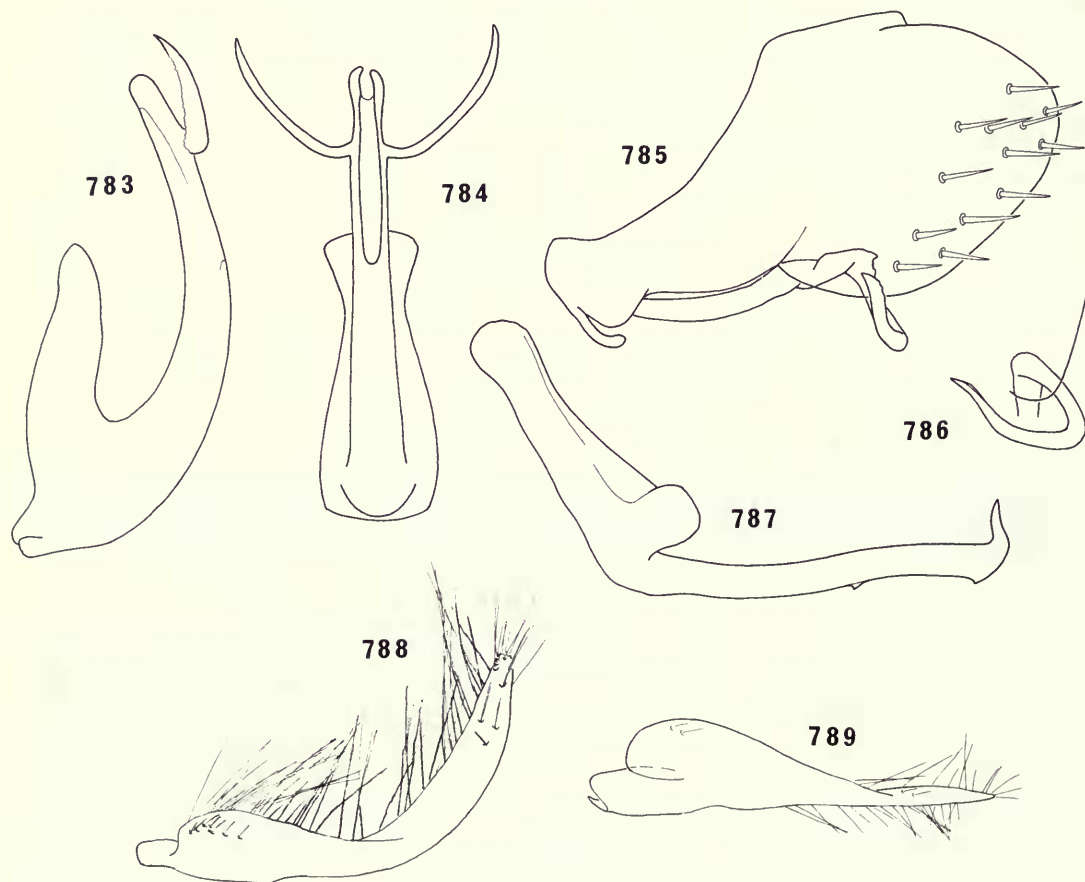
MATERIAL EXAMINED

Holotype ♂, **Solomon Islands**: Kolombangara, 1.6 km inland from Kuzi, Kolombara River, 7.ix.1965 (BMNH).

Paratypes. **Solomon Islands**: 7 ♂, 1 ♀, Bougainville, Guadalcanal, Malaita and Santa Ysabel (BPBM).

Batracomorphus lavinia sp. n.

(Figs 783–789)



Figs 783–789 *Batracomorphus lavinia*. 783, 784, aedeagus; 785, pygophore; 786, left pygophore lobe and process, dorsoposterior view; 787, style; 788, left subgenital plate, left lateral view; 789, same, ventral view. (For further explanation see 'Techniques and methods'.)

Length: ♂, 6.64 mm.

Forewings faintly speckled with small dark brown spots.

Vertex flat.

Male genitalia. Pygophore processes elongate, slender, turned abruptly ventrally at base to near midlength then abruptly laterally and immediately dorsally, apex acute. Subgenital plates normal in shape, as in *harpago*, but basal stem short, ventral marginal row of setae absent and dorsal row multiseriata. Styles with apical process elongate, slender, of uniform width, tapering subapically to acute upturned apex; ventral margin with a small thorn-like projection just distad of midlength and another subapically. Aedeagus slender; shaft directed dorsally and curving slightly anterodorsally; a pair of elongate, subapical processes on posterolateral margins curving laterally and then dorsally; gonopore extending to near midlength of shaft; anterior incision very short.

REMARKS. The present species is one of a group of eight (*lavinia*, *sabinus*, *menelaus*, *othrys*, *pallas*, *zeus*, *diomedé* and *samii*) which are characterised by having the vertex flattened, the subgenital plates devoid of hair-like setae on the ventral margin and with the basal stem short, the aedeagus with a pair of apical or subapical processes and a short anterior incision, the apical process of the style slender and elongate with an acute upturned apex, and slender, variously contorted pygophore processes. The species in this group, which extends from Borneo to New Guinea and Australia, resemble *rhesus* from the Philippines in the shape of the aedeagus and styles but differ in the shape of the vertex and subgenital plates. The present species is most closely related to *sabinus* from New Guinea but differs in the relative length and curvature of the shaft of the aedeagus, the more basally situated and laterally directed processes on the shaft, and the more ventrally directed pygophore processes.

MATERIAL EXAMINED

Holotype ♂, New Guinea: Papua New Guinea, Madang District, Finisterre Mts, Damanti, 1082 m, 2–11.x.1964 (*M. E. Bacchus*) (BMNH).

***Batracomorphus sabinus* sp. n.**

(Figs 790–794)

Length: ♂, 6.56–7.20 mm (mean 6.88 mm).

Pronotum and forewings mottled with small variably sized dark brown spots.

Vertex flat; forewings with additional costal cross veins adjacent to outer subapical cell.

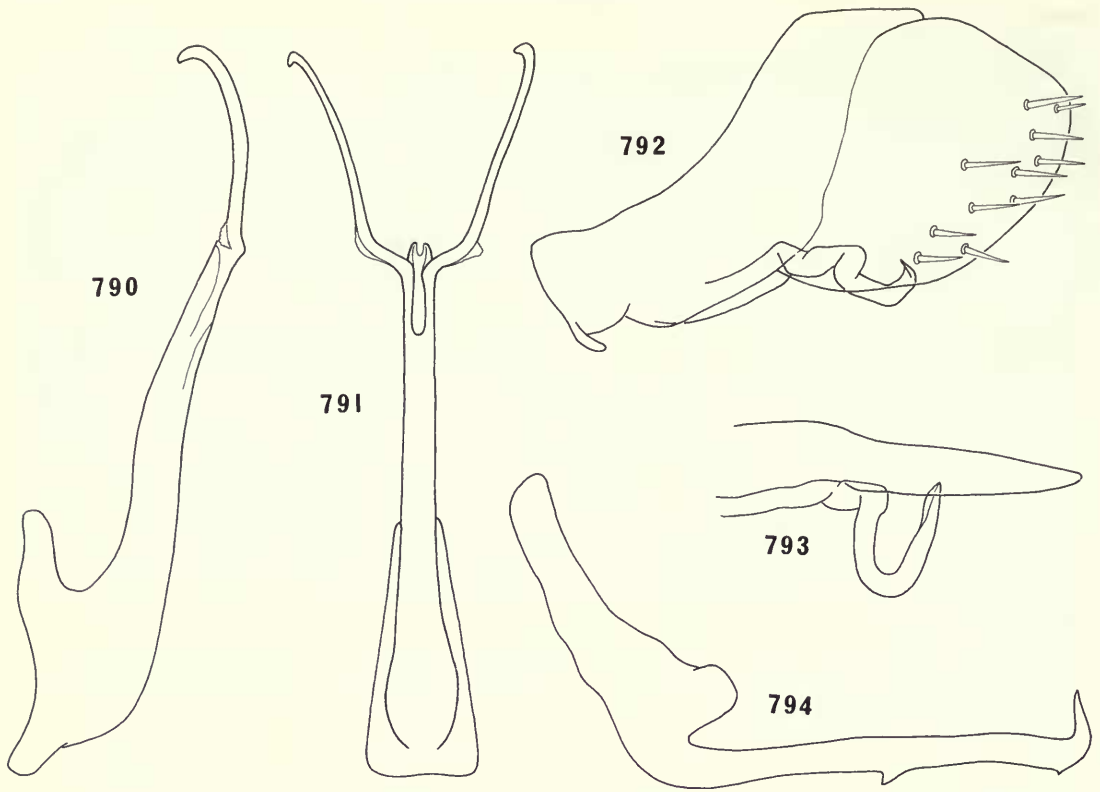
Male genitalia. Pygophore processes slender, turned abruptly medially at base to near midlength then abruptly laterally, apex acute with small lamellate expansion subapically on anterior margin. Subgenital plates as in *lavinia*. Styles with apical process elongate, slender, of uniform width, tapering subapically to acute upturned apex; ventral margin with a thorn-like projection at midlength and a much smaller one subapically. Aedeagus slender; shaft elongate, directed dorsally and curving slightly dorsoposteriorly; a pair of slender processes subapically, directed laterally at base and then immediately dorsally, each with a small lamellate expansion laterally at their base; gonopore extending approximately one-fifth length of shaft; anterior incision very small.

REMARKS. The present species is most closely related to *lavinia* from New Guinea but differs in having a relatively longer and posteriorly curving shaft to the aedeagus with the processes more apical and directed more dorsad. They also differ in the curvature of the pygophore processes which occurs in a horizontal plane in *sabinus* and a vertical plane in *lavinia*. (See additional remarks under *lavinia*.)

MATERIAL EXAMINED

Holotype ♂, New Guinea: Irian Jaya, Cyclops Mts, Mt Lina, 1067–1372 m, iii.1936 (*L. E. Cheesman*) (BMNH).

Paratype. New Guinea: 1 ♂, Waigeu (BMNH).



Figs 790–794 *Batracomorphus sabinus*. 790, 791, aedeagus; 792, pygophore; 793, left pygophore lobe and process, ventral view; 794, style. (For further explanation see 'Techniques and methods'.)

***Batracomorphus menelaus* sp. n.**

(Figs 795–799)

Length: ♂, 6.56–6.64 mm (mean 6.60 mm).

Pronotum and forewings speckled with small dark brown spots, indistinct on forewings.

Vertex flat.

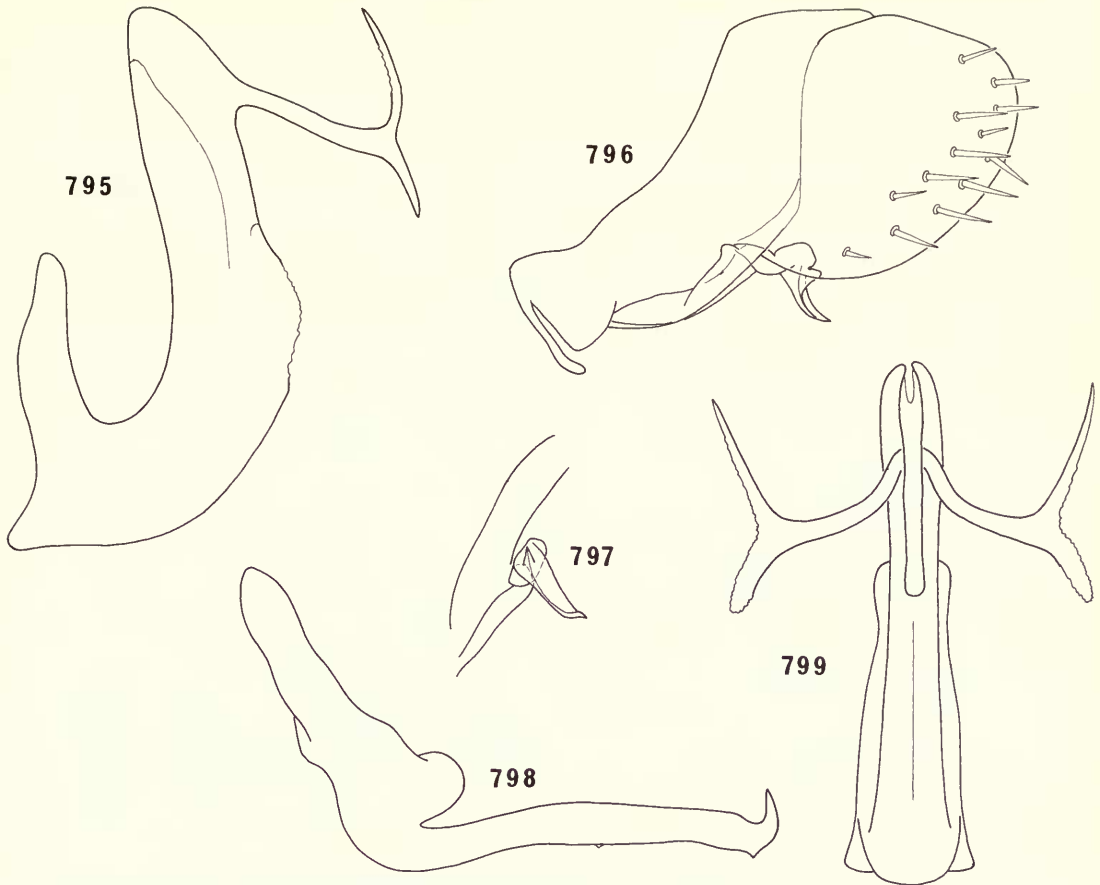
Male genitalia. Pygophore processes short, robust, dagger-like, directed ventromedially, apex acute. Subgenital plates as in *lavinia*. Styles with apical process elongate, slender, of uniform width, tapering subapically to acute upturned apex; ventral margin with a very small thorn-like projection at midlength and another subapically. Aedeagus with shaft broad in lateral aspect, directed dorsally, apex rounded, posterior margin acuminate medially over basal half; a pair of slender divergent processes subapically on posterior margin, directed posteroventrally with apices bifurcate, one branch directed dorsally and other ventrally; gonopore extending to near midlength of shaft; anterior incision short.

REMARKS. The present species is most closely related to *lavinia*, *pallas* and *diomede* but differs from all three in having a broad shaft to the aedeagus, the subapical processes of the aedeagus bifurcate and the pygophore processes robust and dagger-like. (See additional remarks under *lavinia*.)

MATERIAL EXAMINED

Holotype ♂, **New Guinea**: Papua New Guinea, Mafulu, 1220 m, i.1934 (*L. E. Cheesman*) (BMNH).

Paratypes. **New Guinea**: 1 ♂, 1 ♀, same data as holotype (BMNH).



Figs 795–799 *Batracomorphus menelaus*. 795, aedeagus; 796, pygophore; 797, left pygophore lobe and process, posterior view; 798, style; 799, aedeagus. (For further explanation see 'Techniques and methods'.)

***Batracomorphus othrys* sp. n.**

(Figs 800–804)

Length: ♂, 5.44 mm.

Vertex, pronotum, scutellum and forewings mottled with dark brown.

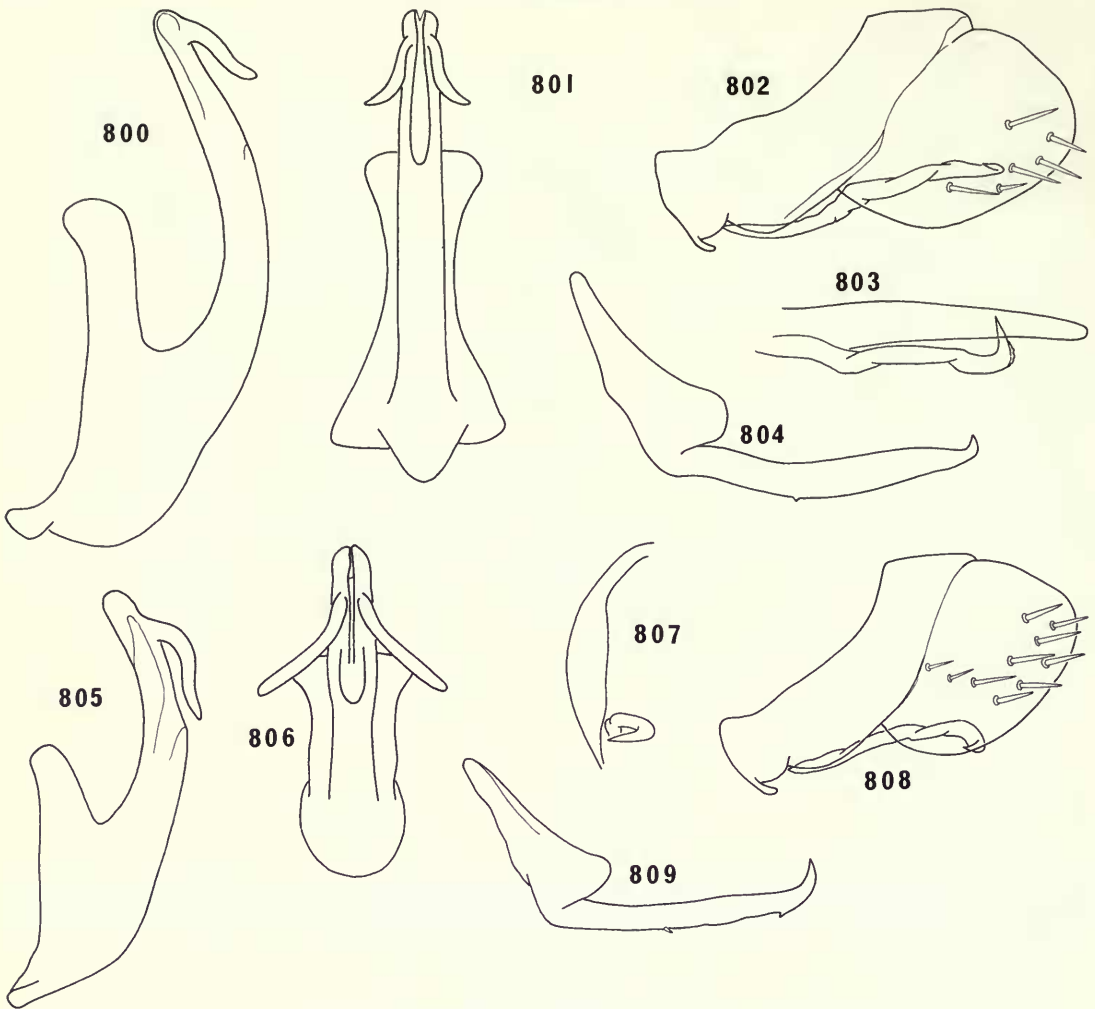
Vertex flat; forewings with additional costal cross veins adjacent to outer subapical cell.

Male genitalia. Pygophore processes slender, directed posteriorly, apex acute and turned abruptly laterally with posterior margin acutely ridged. Subgenital plates as in *lavinia*. Styles with apical process elongate, slender, of approximately uniform width, tapering distally to acute upturned apex, ventral margin with a very small thorn-like projection near midlength. Aedeagus with shaft slender, directed dorsally and curving anterodorsally; a pair of short, ventrally directed, divergent processes subapically on posterior margin; gonopore extending approximately one-third length of shaft; anterior incision very small.

REMARKS. The present species is similar to *pallas* from Australia and *zeus* from New Guinea, New Britain and Borneo but differs from both in the orientation of the pygophore processes and the absence of a subapical projection on the ventral margin of the style. It differs from *pallas* also in the relative length of the subapical processes on the aedeagus. (See additional remarks under *lavinia*.)

MATERIAL EXAMINED

Holotype ♂, **New Guinea**: Papua New Guinea (*J. B. Jackson*) (BMNH).



Figs 800–809 800–804, *Batracomorpha othrys*. (800, 801) aedeagus; (802) pygophore; (803) left pygophore lobe and process, ventral view; (804) style. 805–809, *B. pallas*. (805, 806) aedeagus; (807) left pygophore lobe and process, posterior view; (808) pygophore; (809) style. (For further explanation see 'Techniques and methods'.)

***Batracomorpha pallas* sp. n.**

(Figs 805–809)

Length: ♂, 4.64 mm.

Pronotum, scutellum and forewings speckled with small variably sized, dark brown spots.

Vertex flat.

Male genitalia. Pygophore processes slender, directed posteriorly to near midlength then turned abruptly mesally then laterally, apex acute. Subgenital plates as in *lavinia*. Styles with apical process elongate, slender, of approximately uniform width, tapering distally to acute upturned apex; ventral margin with a small spine subapically and another, sometimes present, just basad of midlength. Aedeagus with shaft slender, directed dorsally and curving anterodorsally; a pair of slender, ventrally directed, divergent processes subapically on posterior margin, extending to lower margin of gonopore; gonopore extending to midlength of shaft; anterior incision short.

REMARKS. The present species is similar to *zeus* from Borneo, New Guinea and New Britain and

diomede from Borneo but differs from *zeus* in having the processes of the aedeagus relatively longer and more closely apposed to the shaft in lateral aspect, and from *diomede* in size and in having the apex of the pygophore processes directed laterally rather than dorsally. (See additional remarks under *lavinia*.)

MATERIAL EXAMINED

Holotype ♂, **Australia**: Queensland, Cairns, viii.1904 (BPBM, Type No. 12,567).

Paratype. **Australia**: 1 ♂, same data as holotype (BPBM).

***Batracomorphus zeus* sp. n.**

(Figs 810–817)

Length: ♂, 4.80–5.12 mm (mean 4.92 mm).

Pronotum, scutellum and forewings speckled with small variably sized dark brown spots.

Vertex slightly flattened.

Male genitalia. Pygophore processes short, slender, directed posteriorly to near midlength then turned abruptly either ventrally then dorsally, mesally then laterally or dorsally then ventrally, apex acute. Subgenital plates as in *lavinia* but with basal stem expanded laterally to lateral margin of lobe. Styles with apical process elongate, slender, distal half slightly narrower than basal, tapering distally to acute upturned apex; ventral margin with a small thorn-like projection near midlength and a much larger one subapically. Aedeagus with shaft slender, directed dorsally and curving slightly anterodorsally; a pair of ventrally directed, divergent processes subapically on posterior margin, branched or unbranched; gonopore extending to just distad of midlength; anterior incision short.

REMARKS. The present species is similar to *pallas* from Australia and *diomede* from Borneo but differs from both in having the processes on the aedeagus relatively shorter and less closely apposed to the shaft in lateral aspect. It differs from *diomede* also in size. The variability in the orientation of the apex of the pygophore processes, which can sometimes exist between the two sides of the body, reduces the value of this character for distinguishing between *zeus* and *pallas*. (See additional remarks under *lavinia*.)

MATERIAL EXAMINED

Holotype ♂, **New Guinea**: Papua New Guinea, Madang District, Finisterre Mts, Damanti, 1082 m, 2–11.x.1964 (*M. E. Bacchus*) (BMNH).

Paratypes. **Borneo**: 6 ♂, Sabah (BPBM). **New Britain**: 4 ♂ (BPBM). **New Guinea**: 2 ♂, Irian Jaya and Papua New Guinea (BMNH).

***Batracomorphus diomede* sp. n.**

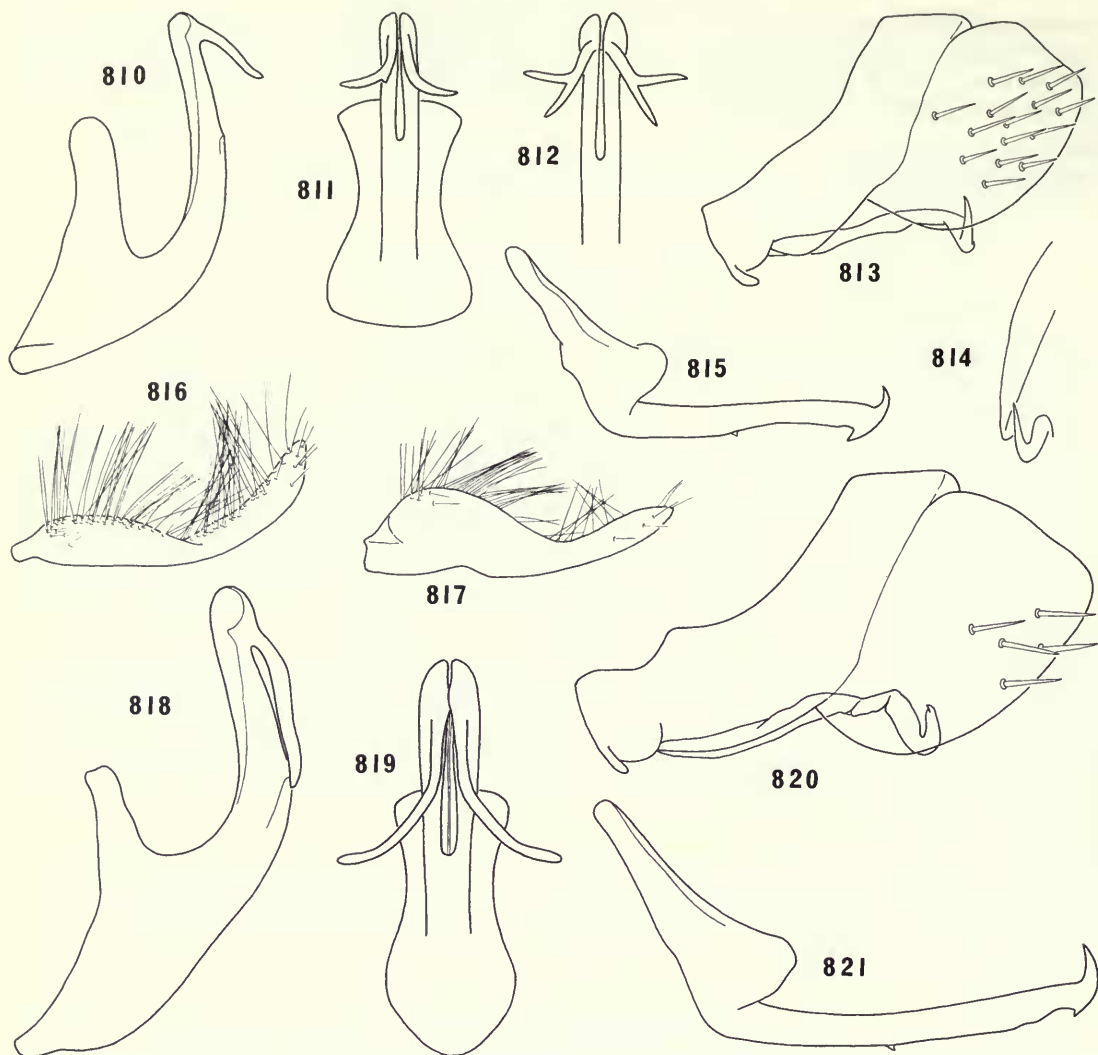
(Figs 818–821)

Length: ♂, 5.92–6.88 mm (mean 6.40 mm).

Pronotum, scutellum and forewings speckled with small variably sized dark brown spots.

Male genitalia. Pygophore processes short, slender, directed posteriorly to near midlength then turned abruptly ventrally then dorsally, apex acute. Subgenital plates as in *lavinia*. Styles with apical process elongate, slender, of uniform width, tapering distally to acute upturned apex; ventral margin with a small thorn-like projection near midlength and another subapically. Aedeagus with shaft slender, directed dorsally and curving slightly anterodorsally; a pair of ventrally directed, divergent processes subapically on posterior margin extending to just basad of midlength of shaft; gonopore extending to just basad of midlength of shaft; anterior incision short.

REMARKS. The present species is one of a group of eight characterised by the shape of the vertex and male genitalia, as described under *lavinia*. It differs from all others in the group by not having the vertex flattened but is clearly related in all other respects. It is closely related to *pallas* from Australia and *zeus* from New Guinea, New Britain and Borneo but is much larger than either of these as well as differing in the shape of the vertex. It also differs from *pallas* in having the apex of the pygophore processes directed dorsally rather than laterally, and from *zeus* in having the subapical processes of the aedeagus relatively longer and more closely applied to the shaft.



Figs 810–821 810–817, *Batracomorpus zeus*. (810, 811) aedeagus; (812) aedeagus, same population; (813) pygophore; (814) left pygophore lobe and process, posterior view; (815) style; (816) left subgenital plate, left lateral view; (817) same, ventral view. 818–821, *B. diomedea*. (818, 819) aedeagus; (820) pygophore; (821) style. (For further explanation see 'Techniques and methods'.)

MATERIAL EXAMINED

Holotype ♂, **Borneo**: Sarawak, Mt Dulit, 1220 m, moss forest, 28.x.1932 (*B. M. Hobby & A. W. Moore*) (BMNH).

Paratype. **Borneo**: 1 ♂, Sabah (BPBM).

Batracomorpus samii Evans

(Figs 822–825)

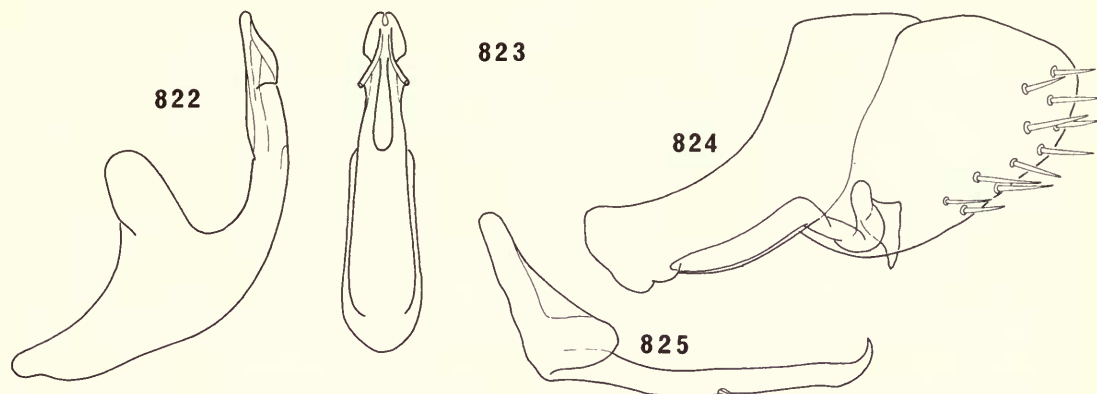
Batracomorpus samii Evans, 1972: 655. Holotype ♂, AUSTRALIA (AM) [examined].

Length: ♂, 5.25 mm.

Vertex and forewings speckled with small variably shaped and sized dark brown spots.

Vertex flattened and with slight ridge round anterior margin; forewing venation normal with 1–2 additional cross veins on costal margin adjacent to outer subapical cell.

Male genitalia. Pygophore processes short, robust, directed posteriorly at base then turned abruptly dorsally with a posteriorly directed, lamellate, foot-shaped expansion subapically on posterior margin. Subgenital plates as in *lavinia*. Styles with apical process elongate, slender, of uniform width, tapering distally to acute upturned apex; ventral margin with a small spine at midlength. Aedeagus with shaft slender, directed dorsally; a pair of posteriorly directed lamellate expansions subapically on lateral margin and another laterally directed pair apically; gonopore extending to near midlength of shaft; anterior incision very short.



Figs 822–825 *Batracomorphus samii* (holotype). 822, 823, aedeagus; 824, pygophore; 825, style. (For further explanation see 'Techniques and methods'.)

REMARKS. The present species is one of a group of eight characterised by the shape of the vertex and male genitalia, as described under *lavinia*. It differs from all others in the group by having lamellate expansions rather than processes at the apex of the aedeagus but is clearly related to them in all other respects. In addition to the absence of processes on the aedeagus it differs from all other species in the group by the shape of the pygophore processes.

DISTRIBUTION. Australia.

MATERIAL EXAMINED

Batracomorphus samii Evans, holotype ♂, Australia: N. Queensland, Cairns, L. T., xi.1969 (*J. Brooks*) (AM).

***Batracomorphus cycnus* sp. n.**

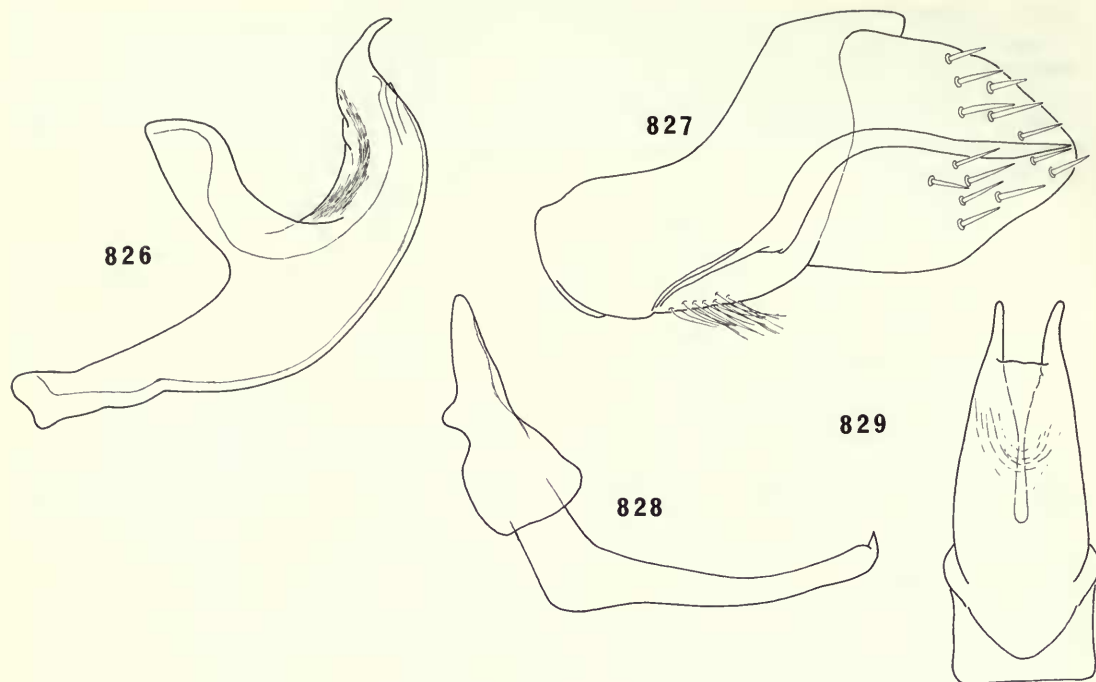
(Figs 826–829)

Length: ♂, 7.28 mm.

Vertex flattened; forewings with additional cross veins on costal margin adjacent to outer subapical cell.

Male genitalia. Pygophore with a group of short hair-like setae basally on ventral margin; processes long, slender, directed dorsally at base then curving posteriorly, apex acute. Subgenital plates as in *zeus* with basal stem expanded laterally to lateral margin of lobe; two multiseriate rows of hair-like setae dorsally from base to apex, one against lateral margin and other against mesal margin, combining apically and extending round apex onto apical region of ventral margin. Styles with apical process broad and distinctly elbowed at base, narrowing to slender, parallel-sided distal half, abruptly tapered distally to acute upturned apex; basal lobe directed laterally. Aedeagus robust; shaft short, broad, directed dorsally with lateral margins extending distally as pair of short, dorsoposteriorly directed horn-like projections; gonopore apical; anterior incision extending to base of shaft.

REMARKS. This species is similar to those of the previous two groups in having the vertex flattened, the subgenital plates devoid of setae on the ventral margin and the basal stem short and the apical process of the style long and slender. It differs from both groups, however, in the shape of the aedeagus with its apical gonopore, the shape of the pygophore processes and in the unique possession of a group of hair-like setae on the ventral basal margin of the pygophore. The



Figs 826–829 *Batracomorpha cycnus*. 826, aedeagus; 827, pygophore; 828, style; 829, aedeagus. (For further explanation see 'Techniques and methods'.)

genitalia show superficial similarity to those of *daedalus* from Sulawesi in the shape of the aedeagus and pygophore processes, but the two species show basic differences in the shape of the subgenital plates and styles as well as differing in the aedeagus, pygophore and in size.

MATERIAL EXAMINED

Holotype ♂, **Philippines**: Luzon, Benguet Province, Baguio (*Baker*) (USNM).

***Batracomorpha iulus* sp. n.**

(Figs 830–833)

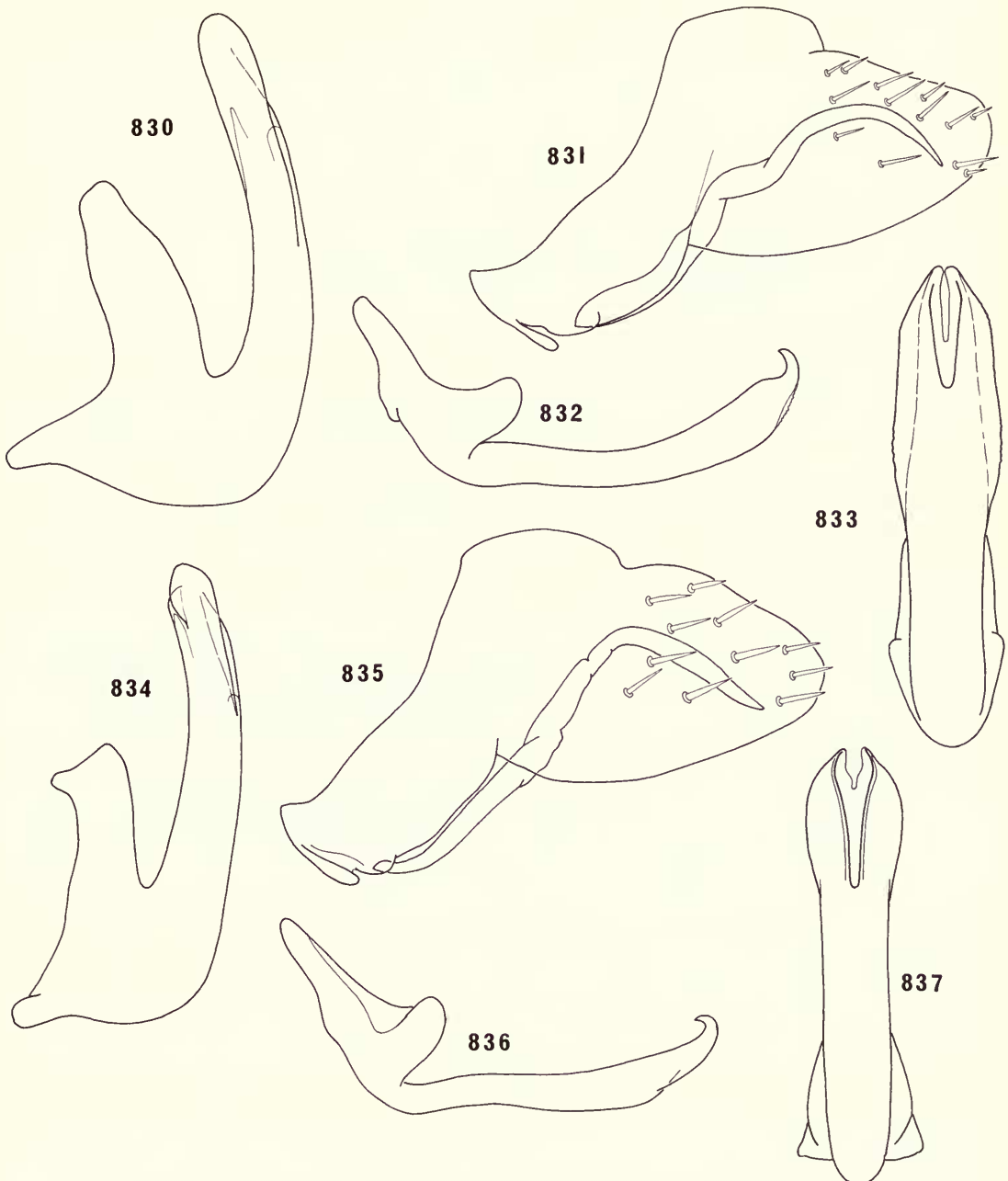
Length: ♂, 6.32 mm.

Vertex flattened.

Male genitalia. Pygophore processes elongate, slender, directed posteriorly at base then abruptly arched dorsally, apex acute and directed posteroventrally. Subgenital plates as in *harpago* but without dorsal setae except for basal group. Styles with apical process elongate, slender, expanding towards apex over distal half, abruptly narrowed subapically to acute upturned apex. Aedeagus with shaft slender, directed dorsally, a lamellate expansion on each posterolateral margin of shaft over distal half; gonopore extending approximately one-fourth length of shaft; anterior incision approximately two-thirds length of gonopore.

REMARKS. This species is one of a group of seven (*iulus*, *anchises*, *alcides*, *palinurus*, *vesta*, *janus* and *eumenides*) which are characterised by having the vertex flattened, the subgenital plates devoid of dorsal setae except for the basal group, the pygophore processes elongate and strongly arched dorsally, the apical process of the style elongate and expanding towards the apex over the distal half, and the aedeagus with lamellate expansions distally on the shaft. The aedeagus is either slender or robust, the latter form having the gonopore relatively short and the anterior incision both short and wide. The species in this group, which occurs in the Philippines, West Malaysia and the western half of Indonesia, show no strong relationship to the main group of species which have normal subgenital plates, although there is a slight resemblance to *peteos* and *troilus* of Borneo which have a slender aedeagus and to *daedalus* of Sulawesi which has a robust

aedeagus and dorsally arched pygophore processes. The present group differs from all three, however, in all other characters. Within the present group, *iulus* is most closely related to *anchises* from the Philippines, Borneo and West Malaysia but is larger and differs in having the anterior incision of the aedeagus relatively longer, the posterolateral expansions on the shaft extending more basad, and the basal portion of the pygophore process directed posteriorly rather than dorsally.



Figs 830–837 830–833, *Batracomorphus iulus*. (830) aedeagus; (831) pygophore; (832) style; (833) aedeagus. 834–837, *B. anchors*. (834) aedeagus; (835) pygophore; (836) style; (837) aedeagus. (For further explanation see ‘Techniques and methods’.)

MATERIAL EXAMINED

Holotype ♂, **Philippines**: Mindanao, Misamis Or., Mt, Balatukan, 15 km SW. of Gingoog, 1000–2000 m, 1–5.v.1960 (*H. Torrevillas*) (BPBM, Type No. 12,568).

***Batracomorphus anchises* sp. n.**

(Figs 834–837)

Length: ♂, 4.56–5.28 mm (mean 4.95 mm).

Vertex flat.

Male genitalia. Pygophore processes elongate, slender, directed dorsoposteriorly over basal half then ventroposteriorly, apex acute. Subgenital plates as in *iulus*. Styles with apical process elongate, slender, expanded just distad of midlength then gradually tapered to acute upturned apex. Aedeagus with shaft slender, directed dorsally, lateral margins expanded keel-like over distal third; gonopore extending approximately one-third length of shaft; anterior incision short, relatively wide (as illustrated) or narrow and more slit-like.

REMARKS. The present species is most closely related to *iulus* from the Philippines but is smaller, has the anterior incision of the aedeagus relatively shorter and the apical keel-like expansions less extensive, the apical process of the style more gradually tapered distally and the pygophore processes directed dorsoposteriorly rather than posteriorly at the base. (See additional remarks under *iulus*.)

MATERIAL EXAMINED

Holotype ♂, **Borneo**: Sabah, 8.vii.1968 (BMNH).

Paratypes. **Borneo**: 9 ♂, Sabah and Sarawak (BPBM). **Philippines**: 16 ♂, 2 ♀, Busuanga, Culion, Luzon, Mindanao, Palawan and Tawi Tawi (BPBM, FMNH, ZM). **West Malaysia**: 1 ♂ (BMNH).

***Batracomorphus alcides* sp. n.**

(Figs 838–841)

Length: ♂, 5.20–5.44 mm (mean 5.29 mm).

Vertex flat.

Male genitalia. Pygophore processes elongate, slender, directed dorsoposteriorly and curving posteroventrally, apex acute. Subgenital plates as in *iulus*. Styles with apical process elongate, slender, expanding towards apex over distal half, abruptly narrowed subapically to acute upturned apex. Aedeagus with shaft slender, directed dorsally, posterolateral margins with long lamellate expansions over midlength and shorter ones subapically; gonopore extending approximately one-third length of shaft; anterior incision short, approximately one-third length of gonopore.

REMARKS. The present species is most closely related to *iulus* from the Philippines and *anchises* from the Philippines, Borneo and West Malaysia but differs from both in having a more elongate shaft to the aedeagus, with lamellate expansions at its midlength as well as apically, and the apical process of the style more abruptly narrowed subapically. (See additional remarks under *iulus*.) It is known only from the Minahassa region of Sulawesi.

MATERIAL EXAMINED

Holotype ♂, **Sulawesi**: Minahassa, vii.1954 (*A. H. G. Alston*) (BMNH).

Paratypes. **Sulawesi**: 3 ♂ (BMNH).

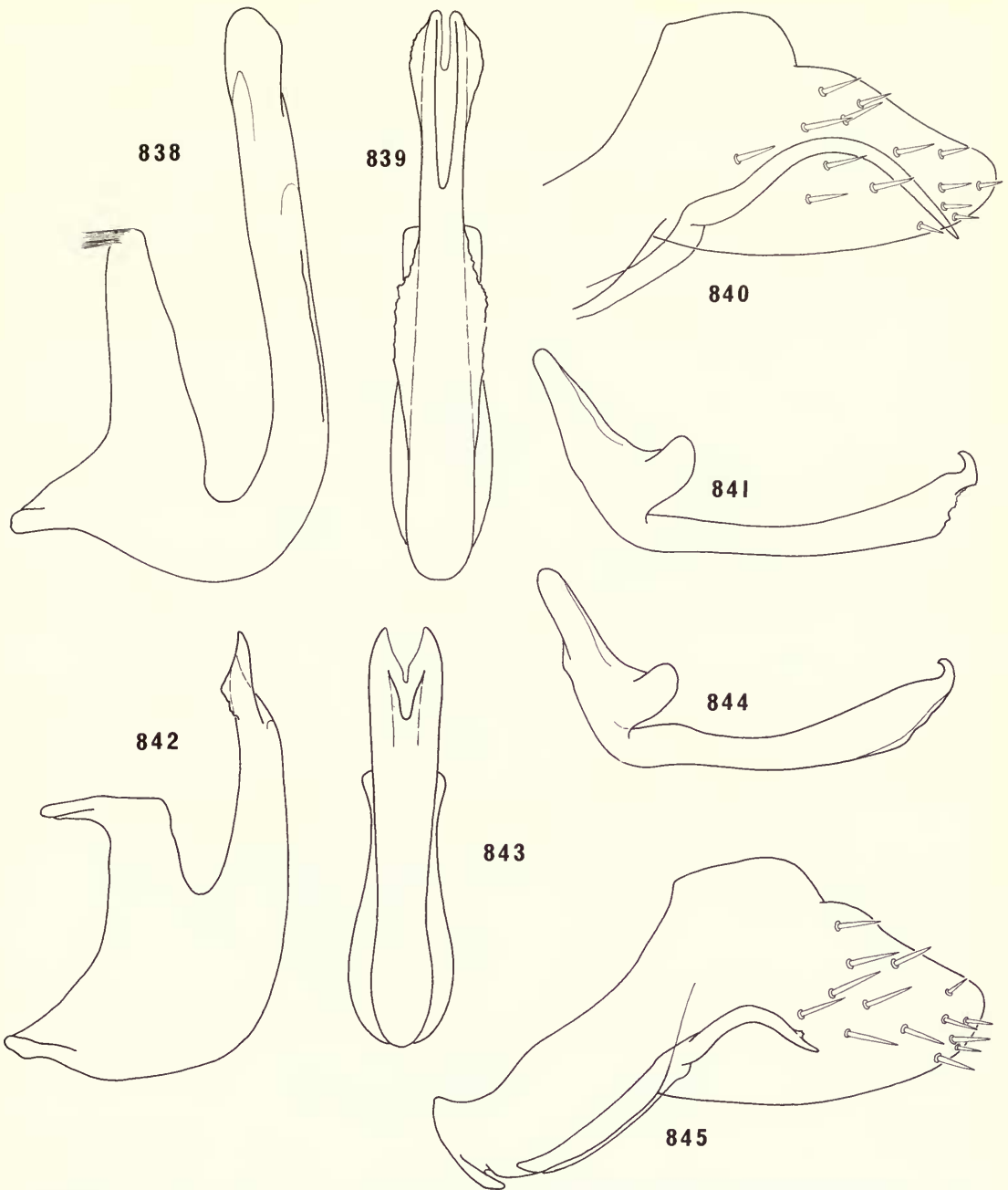
***Batracomorphus palinurus* sp. n.**

(Figs 842–845)

Length: ♂, 4.56–5.28 mm (mean 5.00 mm).

Vertex flat.

Male genitalia. Pygophore processes slender, relatively short (as illustrated) or long (as in *vesta*), directed dorsoposteriorly over basal half then ventroposteriorly, apex acute, a small tubercle subapically on dorsal margin. Subgenital plates as in *iulus*. Styles with apical process elongate, slender, expanding towards apex over distal half then tapering to acute upturned apex. Aedeagus robust basally; shaft



Figs 838–845 838–841, *Batracomorpha alcides*. (838, 839) aedeagus; (840) pygophore; (841) style. 842–845, *B. palinurus*. (842, 843) aedeagus; (844) style; (845) pygophore. (For further explanation see 'Techniques and methods'.)

relatively short, directed dorsally, tapering distally in lateral aspect, terminating in a pair of lateral, distally acute, lamellate lobes; gonopore short; anterior incision short, broadly V-shaped.

REMARKS. The present species varies in the length of the pygophore processes, specimens from Java having the processes short, as illustrated, and the single known specimen from Sarawak having it long as in *vesta*. It is most closely related to *vesta* from Borneo but differs in having the

shaft of the aedeagus tapered apically in lateral aspect and without a marked constriction at its midlength in posterior aspect, and the gonopore not mounted on a short spout. (See additional remarks under *iulus*.)

MATERIAL EXAMINED

Holotype ♂, **Java**: Dampit, Soember Pakel, 1919 (*D. MacGillavry*) (ITZ).

Paratypes. **Java**: 1 ♂, same data as holotype (ITZ). **Borneo**: 1 ♂, Sarawak (BPBM).

***Batracomorphus vesta* sp. n.**

(Figs 846–850)

Length: ♂, 4.80–5.36 mm (mean 4.94 mm).

Vertex flat.

Male genitalia. Pygophore processes elongate, slender, directed dorsoposteriorly and curving ventro-posteriorly, apex acute, a small spur rarely present on ventral margin near midlength. Subgenital plates as in *iulus*. Styles with apical process elongate, slender, expanding slightly towards apex over distal half then tapering to acute upturned apex. Aedeagus robust basally; shaft relatively short, directed dorsally, constricted at midlength in posterior aspect, terminating in a pair of lateral, distally acute, lamellate lobes; gonopore short, mounted on short spout; anterior incision short, V-shaped.

REMARKS. The present species is most closely related to *palinurus* from Java and Borneo but differs in having the shaft of the aedeagus constricted at its midlength in posterior aspect and broadly rounded rather than tapered apically in lateral aspect, and the gonopore mounted on a short spout. (See additional remarks under *iulus*.)

MATERIAL EXAMINED

Holotype ♂, **Borneo**: Sarawak, foot of Mt Dulit, junction of rivers Tinjar and Lejok, 30.x.1932 (*B. M. Hobby & A. W. Moore*) (BMNH).

Paratypes. **Borneo**: 32 ♂, 2 ♀, Sabah and Sarawak (BMNH, BPBM).

***Batracomorphus janus* sp. n.**

(Figs 851–854).

Length: ♂, 4.96–5.04 mm (mean 5.00 mm).

Vertex flat.

Male genitalia. Pygophore processes elongate, slender, directed dorsoposteriorly and curving ventro-posteriorly, apex acute, a short slender spur on ventral margin approximately one-third distance from base. Subgenital plates as in *iulus*. Styles with apical process elongate, slender, expanding slightly towards apex over distal half, then tapering to acute upturned apex. Aedeagus with shaft relatively short, directed dorsally, increasing gradually in width towards apex in posterior aspect and terminating in a pair of lateral, distally acute, lamellate lobes; gonopore short, mounted on short spout; anterior incision short, broadly U-shaped.

REMARKS. The present species is most closely related to *vesta* from Borneo but has more slender pygophore processes with a ventral spur basally, the aedeagus less robust basally and the shaft relatively longer and less constricted at its midlength in posterior aspect, the anterior incision of the shaft much broader and the gonopore much wider distad of the spout. (See additional remarks under *iulus*.) It is known only from the west central area of Malaya.

MATERIAL EXAMINED

Holotype ♂, **West Malaysia**: Kuala Lumpur, 13.ii.1929 (*H. M. Pendlebury*) (BMNH).

Paratype. **West Malaysia**: 1 ♂ (BMNH).

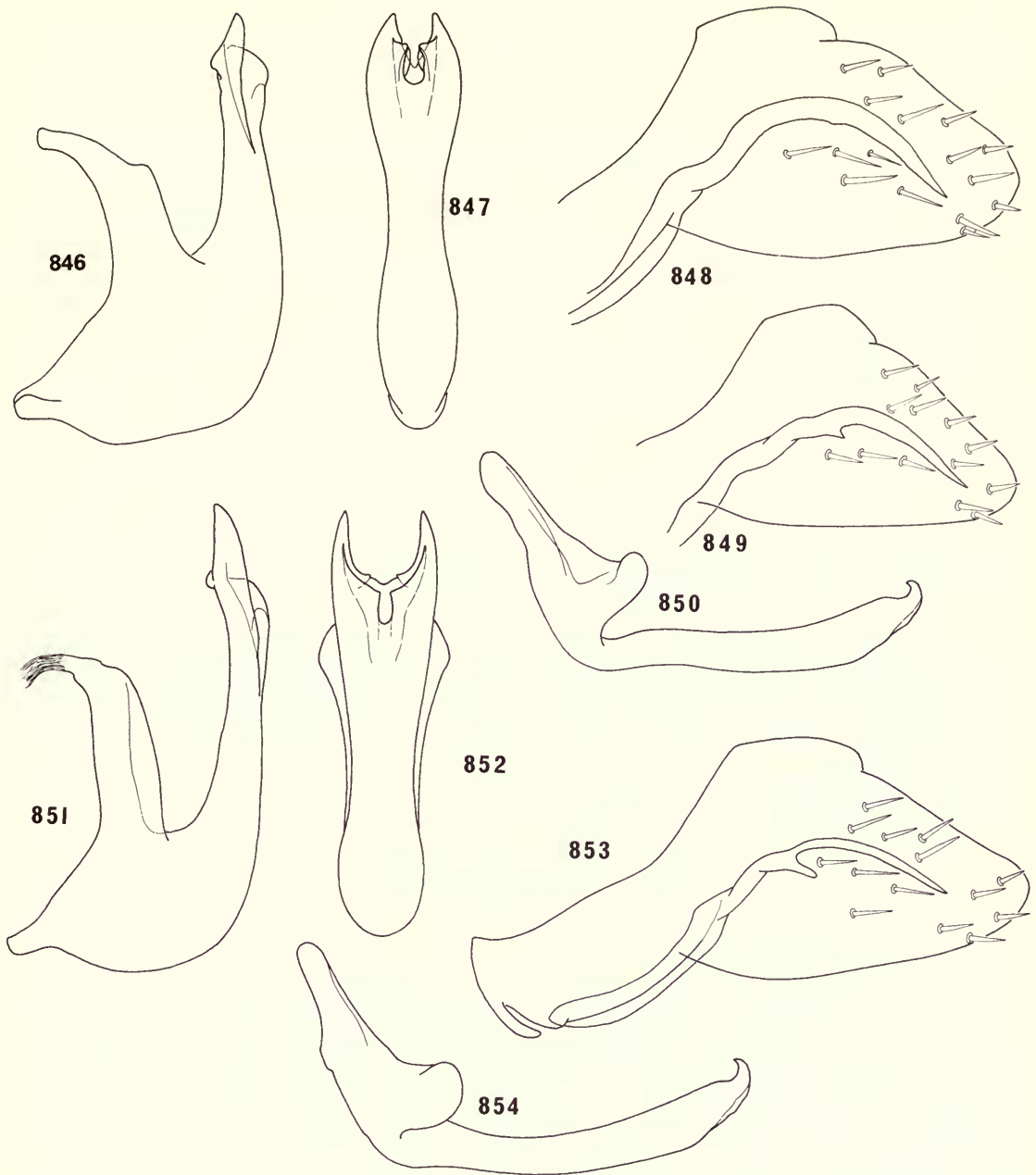
***Batracomorphus eumenides* sp. n.**

(Figs 855–858)

Length: ♂, 4.72 mm.

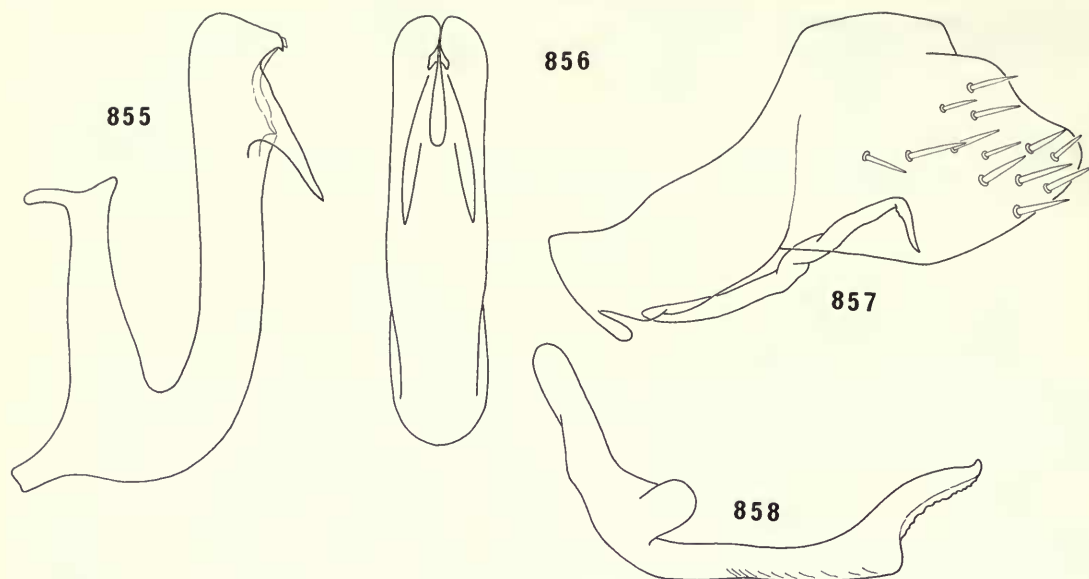
Vertex flat.

Male genitalia. Pygophore processes short, slender, directed posterodorsally to just distad of midlength then turned abruptly ventrally, apex acute. Subgenital plates as in *iulus*. Styles with apical process



Figs 846–854 846–850, *Batracomorphus vesta*. (846, 847) aedeagus; (848) pygophore; (849) pygophore; (850) style. 851–854, *B. janus*. (851, 852) aedeagus; (853) pygophore; (854) style. (For further explanation see 'Techniques and methods'.)

elongate, directed posteriorly over basal two-thirds then turned abruptly dorsoposteriorly and tapering to acute mesally directed apex. Aedeagus with shaft directed dorsally, apex rounded in both lateral and posterior aspect; a pair of posteroventrally directed, triangularly elongate processes on posterior margin near apex, contiguous with a pair of small, broadly triangular, posteriorly directed, subapical, lamellate expansions on posterior margin; gonopore extending approximately one-fourth length of shaft between bases of posterior processes; anterior incision very short.



Figs 855–858 *Batracormorphus eumenides*. 855, 856, aedeagus; 857, pygophore; 858, style. (For further explanation see 'Techniques and methods'.)

REMARKS. The present species is one of a group of seven characterised by the shape of the vertex and male genitalia, as described under *iulus*. It differs from the others in the group by the shape of the style and the presence of processes on the aedeagus yet is sufficiently similar in all other respects to suggest a close association. It is known only from the west central area of Malaya.

MATERIAL EXAMINED

Holotype ♂, West Malaysia: Kuala Lumpur, 27.ii.1919 (BMNH).

Paratypes. West Malaysia: 1 ♂, 1 ♀ (BMNH).

***Batracormorphus nereus* sp. n.**

(Figs 859–863)

Length: ♂, 4.88–5.28 mm (mean 5.12 mm).

Vertex flat.

Male genitalia. Pygophore processes elongate, slender, directed posteriorly, apex acute and turned dorsoposteriorly, ventral margin acutely ridged and irregularly and narrowly lamellate over distal half, processes sometimes rotated on longitudinal axis so apex turned mesoposteriorly and lateral margin acutely ridged and lamellate, differing sometimes between two sides of pygophore. Subgenital plates as in *harpago* but without setae on dorsal margin except for basal group. Styles with apical process elongate, increasing markedly in width towards apex then abruptly narrowed subapically to acute upturned apex. Aedeagus short, robust, without basal apodeme; shaft short, wide and broadly rounded apically in lateral aspect, laterally compressed, directed dorsally and recurved anterodorsally; gonopore extending approximately one-third length of shaft; anterior incision extending to near midlength of shaft.

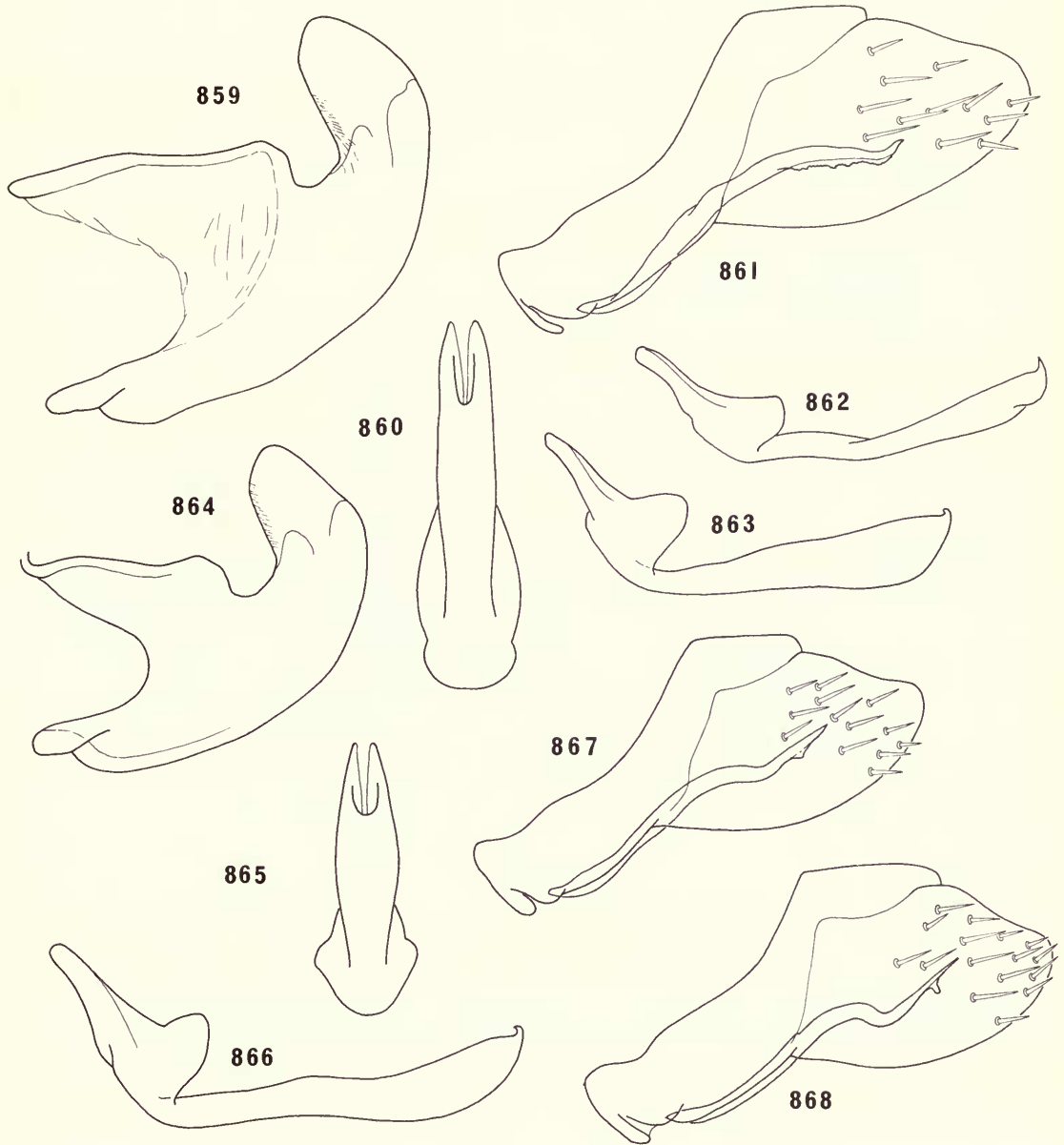
REMARKS. This species is one of a group of four (*nereus*, *tullus*, *brooksi* and *ogasawarensis*) which are characterised by having the vertex flattened, the subgenital plates as in *harpago* but without the full complement of hair-like setae on the dorsal surface and sometimes also ventral surface, the pygophore processes slender and simple, the aedeagus robust, devoid of a prominent basal apodeme and with the shaft short and recurved anteriorly, and the apical process of the styles increasing markedly in width over its distal half. The species in this group, which occurs in the Philippines, Australia and the Bonin Islands, resemble *lentiginosus*, *dymas* and *remus* in the shape of the aedeagus although the latter is much more robust in the present group. The apical process of the styles is also more expanded in the present group, the basal stem and lobe of the

subgenital plates more pronounced and the vertex flattened. The present species is most closely related to *tullus* from the Philippines but differs in having the pygophore processes acuminate ventrally over their distal half and turned dorsoposteriorly at their apex rather than midlength.

MATERIAL EXAMINED

Holotype ♂, **Philippines**: Luzon, Mt Makiling (*Baker*) (USNM).

Paratypes. **Philippines**: 23 ♂, 16 ♀, Balabac, Luzon and Negros (AMNH, BPBM, USNM, ZM).



Figs 859–868 859–863, *Batracomorpha nereus*. (859, 860) aedeagus; (861) pygophore; (862) style; (863) same, ventrolateral view. 864–868, *B. tullus*. (864, 865) aedeagus; (866) style; (867) pygophore; (868) pygophore. (For further explanation see 'Techniques and methods'.)

***Batracomorphus tullus* sp. n.**

(Figs 864–868)

Length: ♂, 5.36–5.76 mm (mean 5.53 mm).

Vertex flat.

Male genitalia. Pygophore processes slender, elongate, directed posteriorly at base and turned dorso-posteriorly near midlength, tapering to acute spatulate apex, a small lamellate extension subapically on ventral margin. Subgenital plates as in *harpago* but without setae on dorsolateral margin except for basal group. Styles with apical process elongate, expanding towards apex over distal half, then abruptly narrowed subapically to acute upturned apex. Aedeagus short, robust, without basal apodeme; shaft short, wide and broadly rounded apically in lateral aspect, laterally compressed, directed dorsally and recurved anterodorsally; gonopore extending approximately one-third length of shaft; anterior incision extending to near midlength of shaft.

REMARKS. This species is most closely related to *nereus* from the Philippines but differs in having the pygophore processes directed dorsoposteriorly at their midlength rather than subapically, and without an acutely ridged ventral margin over their distal half. (See additional remarks under *nereus*.)

MATERIAL EXAMINED

Holotype ♂, **Philippines**: Mindanao, Misamis Or., Mt Empagatao, 1100–1600 m, 22.iv.1961 (*H. M. Torrevillas*) (BPBM, Type No. 12,569).

Paratypes. **Philippines**: 5 ♂, Mindanao (BPBM, FMNH).

***Batracomorphus brooksi* Evans**

(Figs 869–874)

Batrachomorphus brooksi Evans, 1972: 654. Holotype ♂, AUSTRALIA (AM) [examined].

Length: ♂, 5.75 mm.

Pronotum with irregular dark brown markings along anterior margin.

Vertex flattened.

Male genitalia. Pygophore processes short, membranous, finger-like, directed posteriorly. Subgenital plates with basal stem and lobe as in *harpago*, dorsoventrally compressed; a multiseriate row of reclined setae along distal half of dorsal surface to just before apex, with minute setae only over rest of plate. Styles with apical process elongate, slender, of approximately uniform width throughout length except for slight constriction at midlength, tapering distally to acute upturned apex. Aedeagus short, robust, without basal apodeme; shaft short, wide and broadly rounded apically in lateral aspect, laterally compressed, directed dorsally and recurved anterodorsally; gonopore extending approximately one-third length of shaft; anterior incision extending to just distad of midlength of shaft.

REMARKS. This species is one of a group of four characterised by the shape of the vertex and male genitalia as described under *nereus*. It differs slightly from others in the group in the subgenital plates and the shape of the styles but is clearly related in all other respects. It is distinguished from the other three species not only by its subgenital plates and styles but also by the shape of the pygophore processes.

DISTRIBUTION. Australia.

MATERIAL EXAMINED

Batrachomorphus brooksi Evans, holotype ♂, **Australia**: Queensland, Cairns, xii.1969 (*J. Brooks*) (AM) [not 'Kuranda' as stated in the original description].

***Batracomorphus ogasawarensis* (Matsumura)**

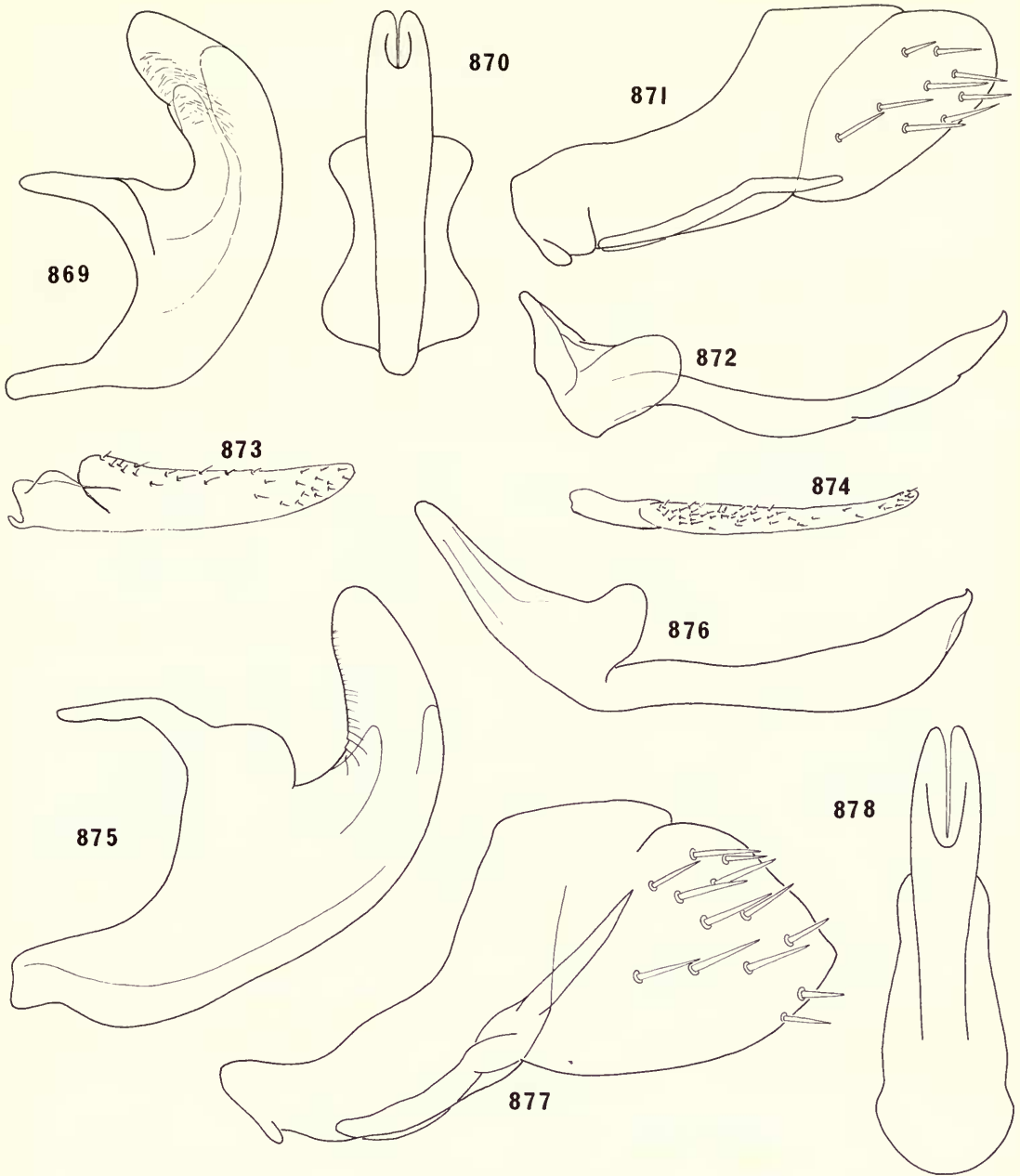
(Figs 875–878)

Macropsis ogasawarensis Matsumura, 1912: 299. Lectotype ♂, BONIN ISLANDS (EIHU) [examined].

Length: ♂, 5.30 mm.

Vertex flat and very slightly produced medially.

Male genitalia. Pygophore processes slender, directed dorsoposteriorly from base, apex acute and



Figs 869–878 869–874, *Batracomorphus brooksi* (holotype). (869, 870) aedeagus; (871) pygophore; (872) style; (873) left subgenital plate, ventral view; (874) same, left lateral view. 875–877, *B. ogasawarensis* (lectotype). (875) aedeagus; (876) style; (877) pygophore; (878) aedeagus. (For further explanation see 'Techniques and methods'.)

curving dorsolaterally. Subgenital plates as in *harpago* but without dorsal or ventral setae except for basal group. Styles with apical process elongate, slender, expanding towards apex over distal half and abruptly tapered subapically to acute upturned apex. Aedeagus short, robust, without basal apodeme; shaft short, wide and broadly rounded apically in lateral aspect, laterally compressed, directed dorsally and turned slightly anterodorsally; gonopore extending to near midlength of shaft; anterior incision extending to just basad of midlength of shaft.

REMARKS. This species is one of a group of four characterised by the shape of the vertex and male genitalia, as described under *nereus*. It differs from the others in the group by having the vertex slightly produced medially and by the total absence of setae on the subgenital plates except for the basal group. It is further distinguished by the pygophore processes which are directed dorsoposteriorly from their base.

DISTRIBUTION. Bonin Islands.

MATERIAL EXAMINED

Macropsis ogasawarensis Matsumura, lectotype ♂, **Bonin Islands**: Ogasawara, 20.viii.1905 (*Matsamura*) (EIHU).

***Batracomorpha cyprian* sp. n.**

(Figs 879–883)

Length: ♂, 5.68–6.72 mm (mean 6.22 mm).

Vertex flat.

Male genitalia. Pygophore processes directed posteriorly, terminating in two dentate projections, one directed posteriorly and sometimes curving ventrally and the other ventrally. Subgenital plates as in *harpago* but without dorsal setae except for basal group. Styles with apical process elongate, its distal half more expanded than basal and with ventral margin keel-like and mildly serrate, tapering subapically to acute upturned apex. Aedeagus with shaft elongate, directed dorsally, laterally compressed with small sometimes reduced lamellate expansions subapically on each anterolateral margin, terminating in a pair of slender processes directed anterolaterally at base and then ventrally approximately one-third length of shaft; gonopore very short; anterior incision minute.

REMARKS. This species is one of a group of three (*cyprian*, *adrastus* and *laodamia*) which are characterised by having the vertex flattened, the subgenital plates as in *harpago* but with the dorsal setae absent except for the basal group, and the aedeagus with a pair of slender processes apically, the gonopore short and the anterior incision absent or very small. The species in this group, which occurs in the Philippines and Borneo, resemble *rhesus* from the Philippines in the shape of the aedeagus but differ in having a relatively shorter gonopore, a flattened vertex and the absence of dorsal setae on the subgenital plates except for the basal group. The present species is most closely related to *laodamia* from the Philippines and Borneo but is larger and has the pygophore processes and styles more robust apically.

MATERIAL EXAMINED

Holotype ♂, **Philippines**: Mindanao, Misamis Or., Mt Balatukan, 15 km SW. of Gingoog, 1000–2000 m, 27–30.iv.1960 (*H. M. Torrevillas*) (BPBM, Type No. 12,570).

Paratypes. **Philippines**: 3 ♂, 1 ♀, Leyte, Luzon and Mindanao (AMNH, BPBM).

***Batracomorpha adrastus* sp. n.**

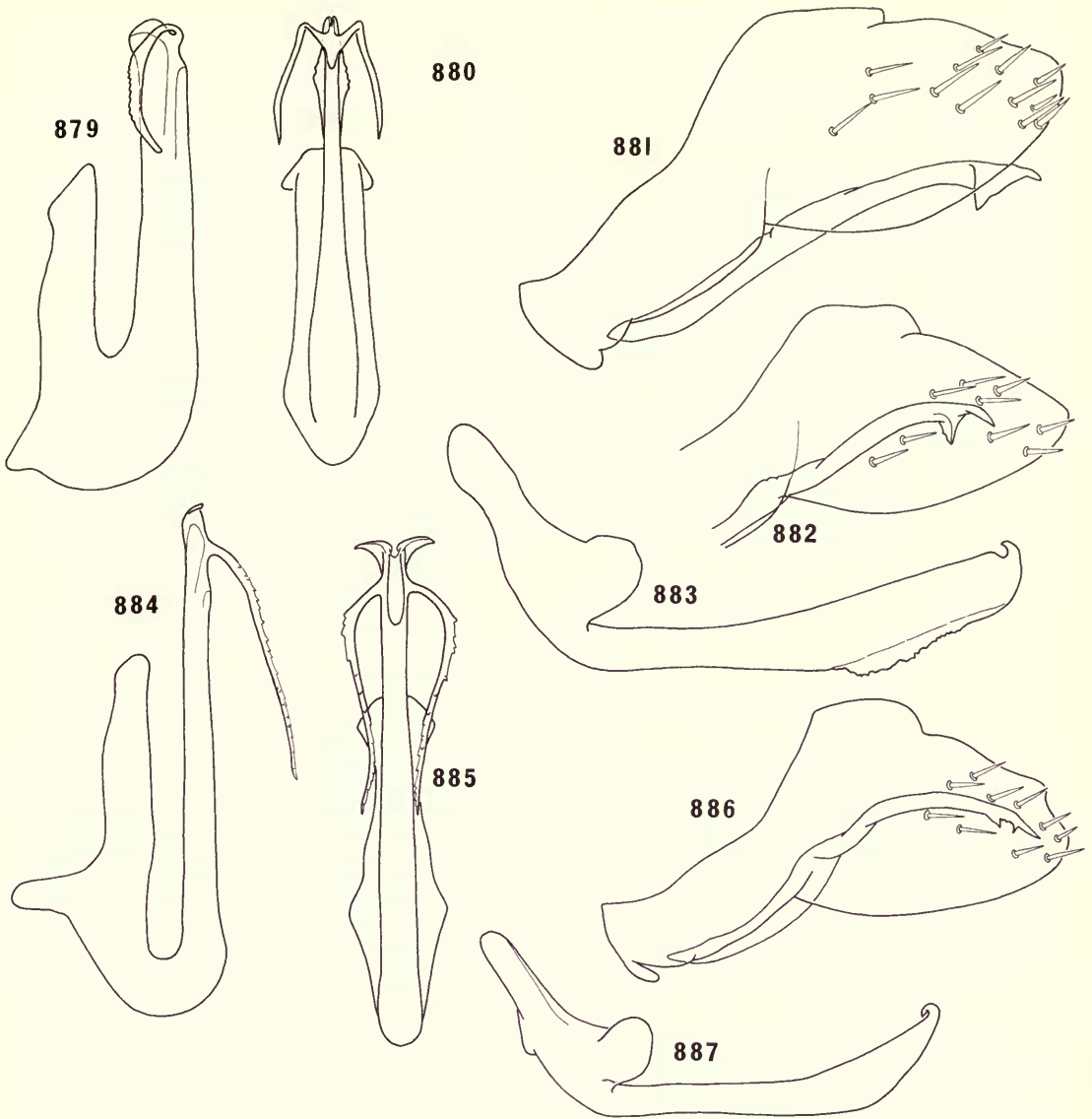
(Figs 884–887)

Length: ♂, 4.80–5.12 mm (mean 4.96 mm).

Vertex flat.

Male genitalia. Pygophore processes slender, directed posteriorly and slightly arched, apex acute with 2–3 small teeth subapically on ventral margin. Subgenital plates as in *cyprian*, basal lobe small. Styles with apical process elongate, expanded over its distal half and tapering gradually to acute dorsally hooked apex. Aedeagus with shaft long, slender, directed dorsally, terminating in a pair of small, laterally directed, triangular expansions; a pair of filamentous subapical processes, directed ventrally to approximately midlength of shaft, their surface irregularly adorned with small conical barbs; gonopore extending approximately one-sixth length of shaft; anterior incision very short.

REMARKS. This species is one of a group of three characterised by the shape of the vertex and male genitalia as described under *cyprian*. It differs from the others in the group in having the shaft of the aedeagus more slender and terminating in triangular expansions and the subapical processes longer. It differs also in the more slender pygophore processes and styles.



Figs 879–887 879–883, *Batracomorphus cyprian*. (879, 880) aedeagus; (881) pygophore; (882) pygophore; (883) style. 884–887, *B. adrastus*. (884, 885) aedeagus; (886) pygophore; (887) style. (For further explanation see 'Techniques and methods'.)

MATERIAL EXAMINED

Holotype ♂, **Borneo**: Sarawak, foot of Mt Dulit, junction of rivers Tinjar and Lejok, 26.viii.1932 (*B. M. Hobby & A. W. Moore*) (BMNH).

Paratypes. **Borneo**: 8 ♂, 2 ♀, Sabah and Sarawak (BMNH, BPBM).

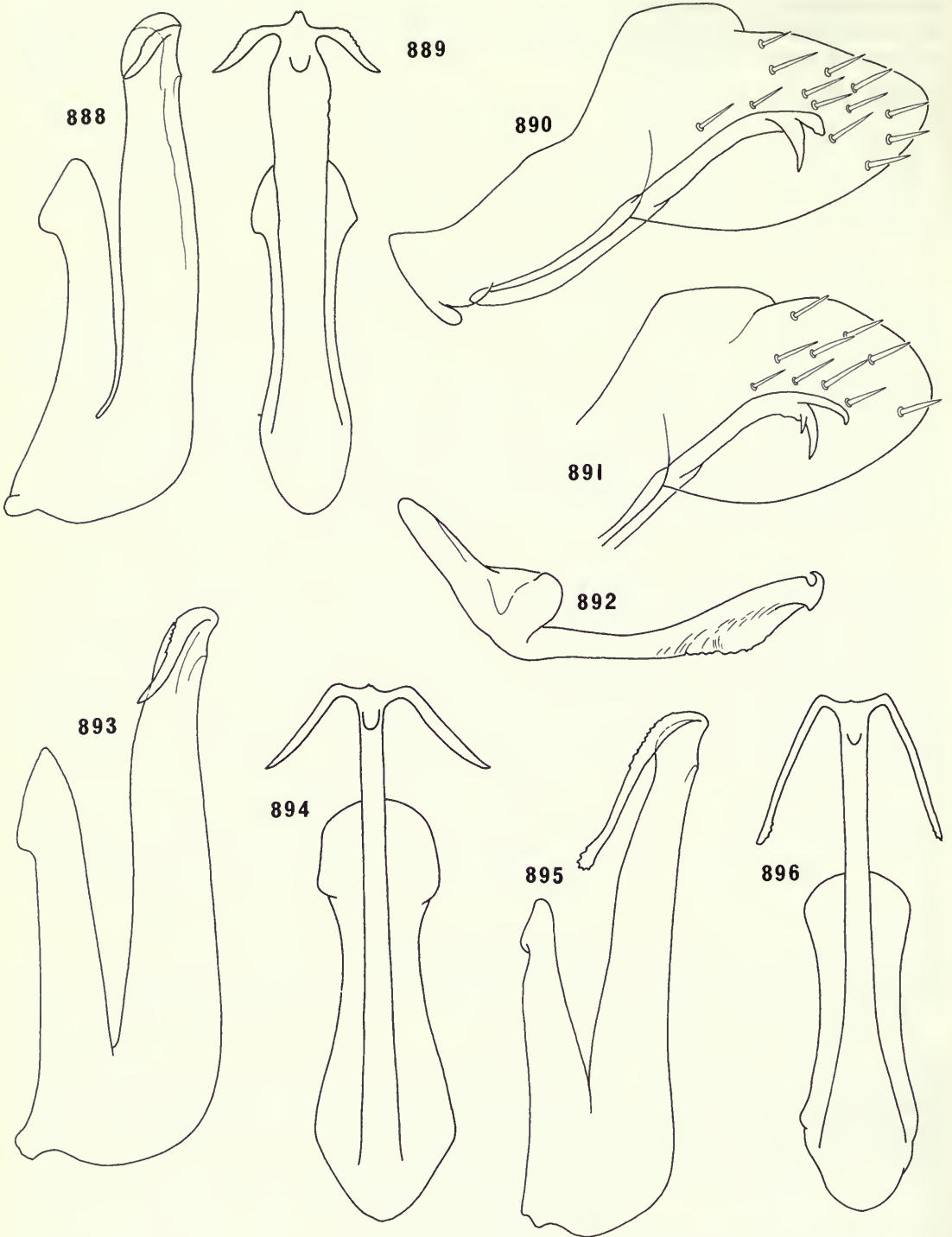
***Batracomorphus laodamia* sp. n.**

(Figs 888–896)

Length: ♂, 4.88–5.20 mm (mean 5.00 mm).

Vertex flat.

Male genitalia. Pygophore processes slender, directed dorsoposteriorly with distal third turned pos-



Figs 888–896 *Batracomorpha laodamia*. 888, 889, aedeagus (Philippines); 890, pygophore (Philippines); 891, same (Borneo); 892, style; 893, 894, aedeagus (Borneo); 895, 896, aedeagus (Borneo). (For further explanation see 'Techniques and methods'.)

teriorly and terminating in two ventrally directed dentate projections. Subgenital plates as in *cyprian*. Styles with apical process slender, of approximately uniform width but with lamellate expansion on ventral margin over distal half, tapering distally to acute upturned apex. Aedeagus with shaft slender, laterally compressed, directed dorsally, posterolateral margins sometimes expanded keel-like over distal half; a pair of slender processes apically, directed laterally at their base and then ventrolaterally; gonopore very short; anterior incision absent.

REMARKS. This species varies somewhat in the shape of the aedeagus. The specimens from Borneo differ from those from the Philippines in the absence of posterolateral keels on the distal half of the aedeagus and in having the apical processes longer in some cases, variation in the length of the apical processes occurring among specimens from the same locality. The specimens from Borneo also sometimes have an additional short spine on the more ventral of the projections at the apex of the pygophore processes, its presence or absence also varying within the same locality.

The present species is most closely related to *cyprian* from the Philippines but is much smaller with the styles and pygophore processes less robust. (See additional remarks under *cyprian*.)

MATERIAL EXAMINED

Holotype ♂, **Philippines**: Palawan, Mantalingajan, Pinigisan, 600 m, 13.ix.1961 (ZM).

Paratypes. **Borneo**: 3 ♂, Sabah and Sarawak (BPBM). **Philippines**: 1 ♂, Balabac (ZM).

Batracomorphus dymas sp. n.

(Figs 897–902)

Length: ♂, 4.88–4.96 mm (mean 4.92 mm).

Forewings darker than body with two transverse whitish bands, one at midlength of clavus and other at apex of clavus; pronotum, scutellum and forewings mottled with small dark brown spots.

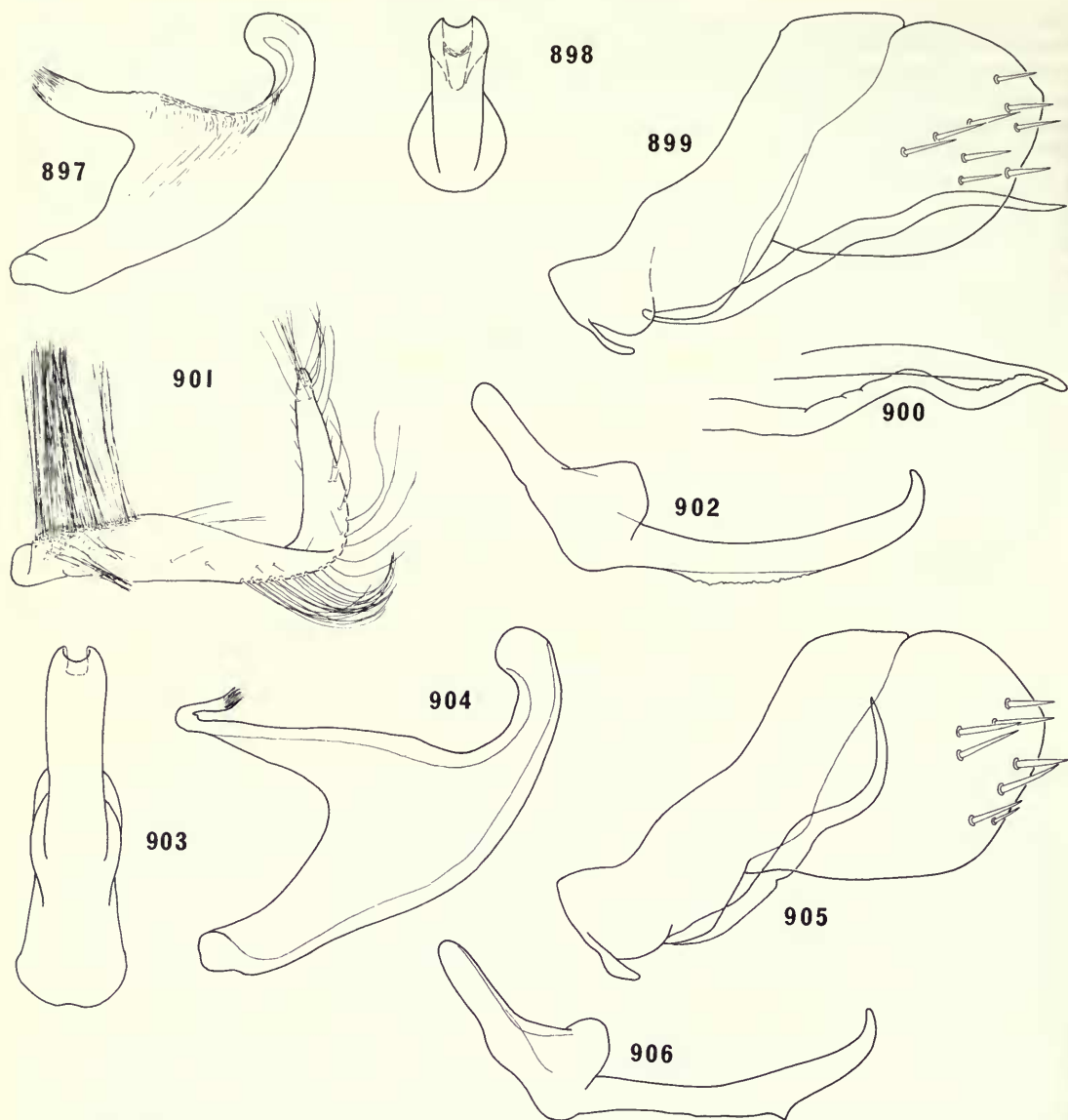
Male genitalia. Pygophore processes slender, directed dorsoposteriorly to midlength then posteriorly, apex acute. Subgenital plates as in *harpago* but turned dorsally near midlength, basal stem short, a group of long hair-like setae basally on dorsolateral margin, another at midlength on ventral margin and a third at apex. Styles with apical process elongate, slender, of uniform width, tapering distally to acute upturned apex; ventral margin acutely ridged and weakly serrate over basal half. Aedeagus short, robust, basal apodeme absent; shaft short, directed dorsally and recurved anteriorly; gonopore apical; anterior incision very short.

REMARKS. This species is one of a group of three (*dymas*, *remus* and *lentiginosus*) which are characterised by having the subgenital plates as in *harpago* but without setae on the dorsal margin except for the basal group and with the basal stem short, the aedeagus short and robust, without a basal apodeme and with the shaft recurved anteriorly and with a short gonopore and anterior incision, the apical process of the styles slender, of approximately uniform width and turned dorsad at the apex, and the pygophore processes elongate and slender. All three species are further characterised by having transverse whitish bands across the forewings and small dark brown spots on the dorsum. The species in this group, which occurs in New Guinea and Australia, are similar to *neruus*, *tullus*, *brooksi* and *ogasawarensis* from Australia, Philippines and the Bonin Islands, in the shape of the aedeagus and subgenital plates but differ in having the basal stem of the plates much smaller, the shaft of the aedeagus more slender, the apical process of the style of uniform width, and the vertex regularly rounded to the face rather than flattened. The present species differs from the others in the group by having relatively longer and posteriorly directed pygophore processes.

MATERIAL EXAMINED

Holotype ♂, **New Guinea**: Papua New Guinea, Madang District, Finisterre Mts, Damanti, 1082 m, 2–11.x.1964 (*M. E. Bacchus*) (BMNH).

Paratypes. **New Guinea**: 2 ♂, same data as holotype (BMNH).



Figs 897-906 897-902, *Batracomorphus dymas*. (897, 898) aedeagus; (899) pygophore; (900) left pygophore lobe and process, ventral view; (901) left subgenital plate, left lateral view; (902) style. 903-906, *B. remus* (903, 904) aedeagus; (905) pygophore; (906) style. (For further explanation see 'Techniques and methods'.)

***Batracomorphus remus* sp. n.**

(Figs 903-906)

Length: ♂, 4.56-4.72 mm (mean 4.64 mm).

Forewings greyish, basal area to apex of scutellum dark brown, a broad transverse band at midlength and apical area distad of clavus pale brownish; vertex, pronotum and forewings sparsely speckled with small dark brown spots; scutellum pale brown with basal angles and broad area on each side of midline dark brown.

Male genitalia. Pygophore processes slender, directed posteriorly at base then curving dorsally, apex acute. Subgenital plates as in *dymas*. Styles with apical process elongate, slender, of approximately

uniform width, tapering distally to acute upturned apex, a small thorn-like projection on ventral margin just distad of midlength. Aedeagus short, robust, basal apodeme absent; shaft short, directed dorsally and slightly recurved anteriorly; gonopore apical; anterior incision very short.

REMARKS. The present species is one of a group of three characterised by the shape of the male genitalia and the pigmentation of the dorsum, as described under *dymas*. It differs from the other two in the group by having the pygophore processes directed dorsally rather than posteriorly.

MATERIAL EXAMINED

Holotype ♂, **New Guinea**: Papua New Guinea, Madang District, Finisterre Mts, Damanti, 1082 m, 2–11.x.1964 (*M. E. Bacchus*) (BMNH).

Paratype. **New Guinea**: 1 ♂, same data as holotype.

***Batracomorphus lentiginosus* (Kirkaldy)**

(Figs 907–911)

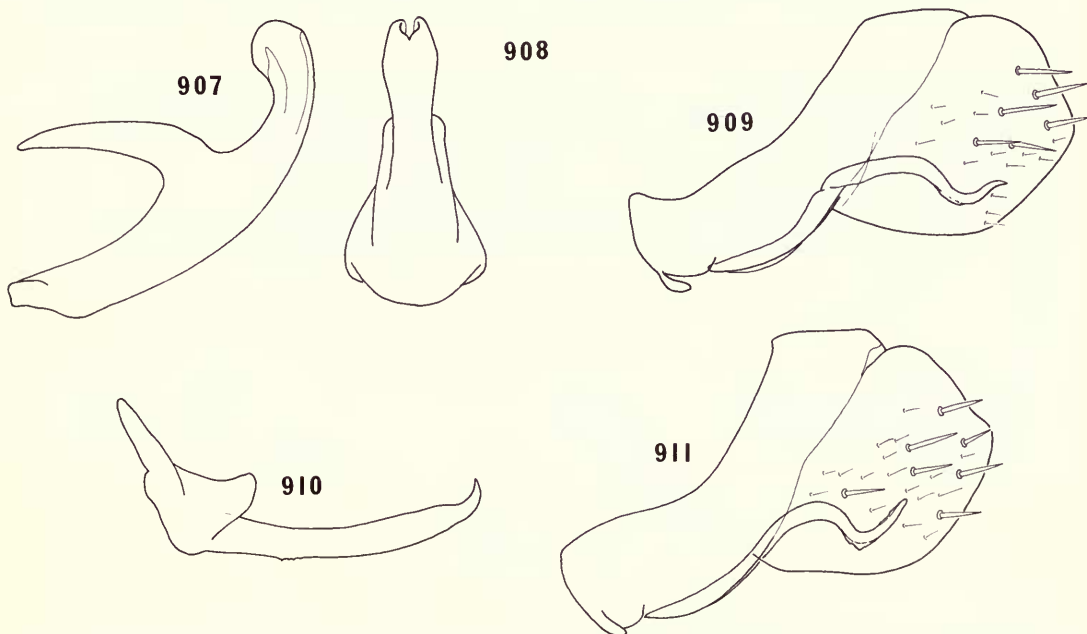
Eurinoscopus lentiginosus Kirkaldy, 1906: 347. Holotype ♂, AUSTRALIA (BPBM) [examined].

Batrachomorphus fasciatus Evans, 1972: 655. Holotype ♂, AUSTRALIA (AM) [examined]. **Syn. n.**

Length: ♂, 4.00 mm.

Forewings darker than body with three transverse unpigmented bands, one at midlength of clavus, another at apex of clavus and third across base of apical cells, bands sometimes indistinct; forewings densely speckled with small dark brown spots; vertex, pronotum and scutellum sparsely speckled with smaller dark brown spots; clypeus and basal angles of scutellum sometimes dark brown; medial area of vertex, pronotum and scutellum sometimes tinged with dark brown.

Male genitalia. Pygophore processes slender, directed posteriorly, turned posteroventrally at midlength then dorsoposteriorly, apex acute and sometimes turned posteriorly, ventral margin acutely ridged just distad of midlength. Subgenital plates as in *dymas*. Styles with apical process slender, elongate, of approximately uniform width, tapering distally to acute upturned apex. Aedeagus short, robust, basal apodeme absent; shaft short, directed dorsally and slightly recurved anteriorly; gonopore apical; anterior incision very short.



Figs 907–911 *Batracomorphus lentiginosus*. 907, 908, aedeagus (holotype); 909, pygophore (holotype); 910, style (holotype); 911, pygophore (holotype of *B. fasciatus*). (For further explanation see 'Techniques and methods'.)

REMARKS. The present species is most closely related to *dymas* from New Guinea but differs in having the pygophore processes sinuate rather than straight in lateral aspect and with their ventral margin acutely ridged just distad of their midlength. (See additional remarks under *dymas*.)

DISTRIBUTION. Australia, New Guinea.

MATERIAL EXAMINED

Eurinoscopus lentiginosus Kirkaldy, holotype ♂, **Australia**: Queensland, Cairns, viii.1904 (BPBM).
Batrachomorphus fasciatus Evans, holotype ♂, **Australia**: Queensland, Cairns, L. T., xi.1969 (*J. Brooks*) (AM).

***Batrachomorphus thestor* nom. n.**

(Figs 912–917)

Edijassus pallidus Evans, 1972: 657. Holotype ♂, NEW GUINEA (BPBM) [examined]. [Junior secondary homonym of *Batrachomorphus pallidus* (Evans, 1935).]

Length: ♂, 8.5 mm.

Irregular dark brown markings along anterior margin of pronotum, basal angles of scutellum, disc of forewings and at apex of both the costal cross-veins and apical veins.

Vertex raised above level of anterior margin of pronotum with its posterior edge strongly declivous; pronotum depressed anteriorly on each side of midline; scutellum transversely depressed at level of scar; forewings with veins elevated, with additional cross-veins basad of subapical cells and on costal margin near apex and with appendix wide.

Male genitalia. Pygophore processes long, slender, curving dorsally near base, expanded slightly subapically then tapering to acute apex. Subgenital plates without basal stem or lobe; a large group of long hair-like setae over basal half of ventrolateral margin and another smaller group at apex on medial surface; a row of shorter setae along medial third of mesal surface just basad of dorsal margin. Styles with apical process elongate, slender, apex upturned. Aedeagus robust basally; shaft relatively short, directed dorsally; gonopore apical on posterior margin; anterior incision short, indistinct.

REMARKS. The original name of this species, herein transferred to *Batrachomorphus* for the first time, is a junior secondary homonym of the nomen dubium *Batrachomorphus pallidus* (Evans, 1935).

This species differs from all others in certain characters of the head, pronotum, scutellum and forewings and was originally placed in a distinct genus. The subsequent discovery of several closely related species in which these characters are absent suggests that the differences are specific rather than generic in nature. It resembles species of the *acestes*-group and the *dymas*-group, as well as the species *cycnus*, in the general appearance of its genitalia but differs from all in the distribution of setae on the subgenital plates. It is most closely related to *leto* which, in lacking the unique external characters of *thestor*, supports the inclusion of the latter with *Batrachomorphus*.

DISTRIBUTION. New Guinea.

MATERIAL EXAMINED

Edijassus pallidus Evans, holotype ♂, **New Guinea**: NE, 11 km S. of Mt Hagen [town], 2200–2300 m, 21.v.1963 (*J. Sedlacek*) (BPBM).

New Guinea: 1 ♀, NE., Edie Creek, Wau, 200 m, 5–11.x.1961 (*Sedlacek*) (BPBM) (allotype of *Edijassus pallidus* Evans).

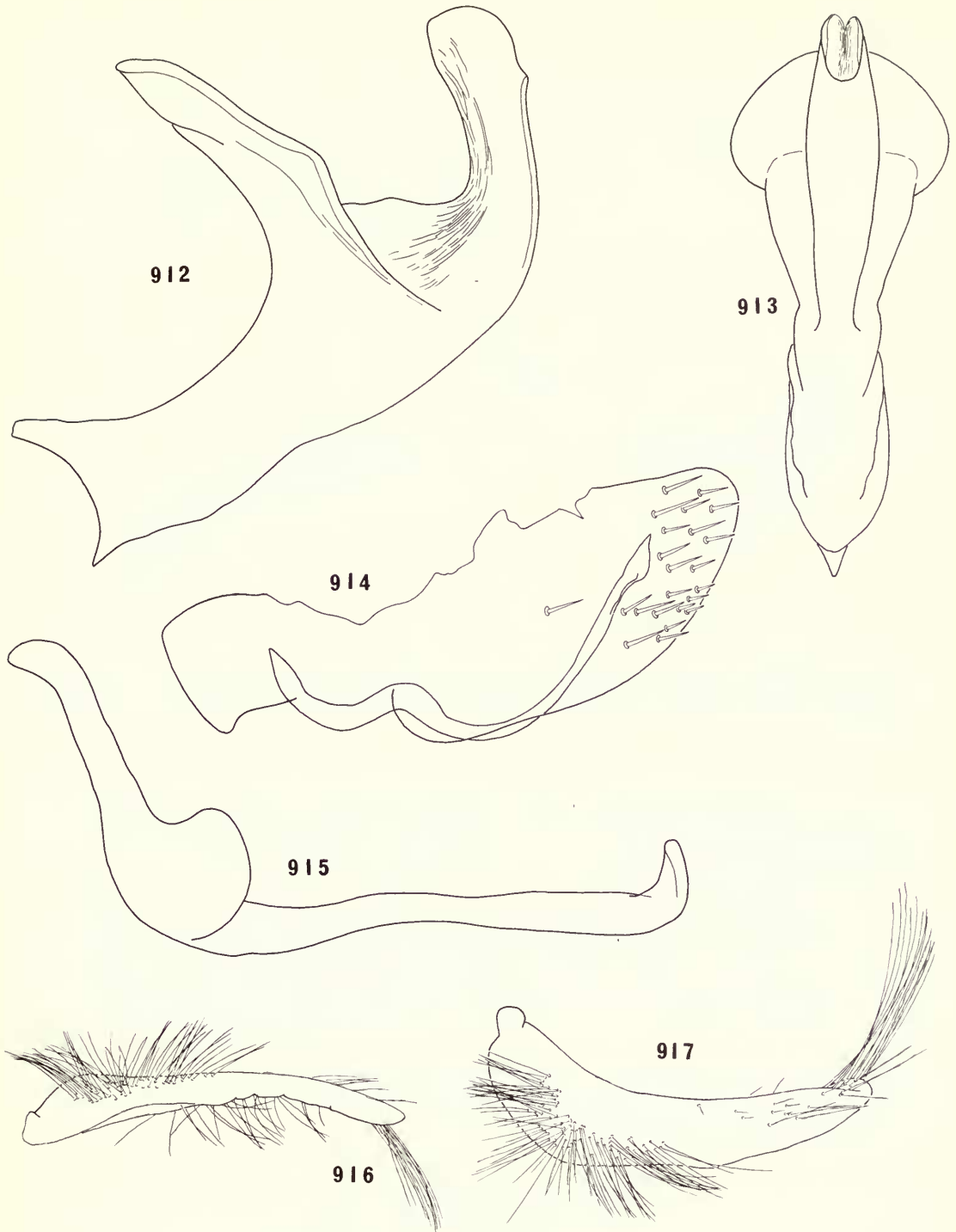
***Batrachomorphus leto* sp. n.**

(Figs 918–923)

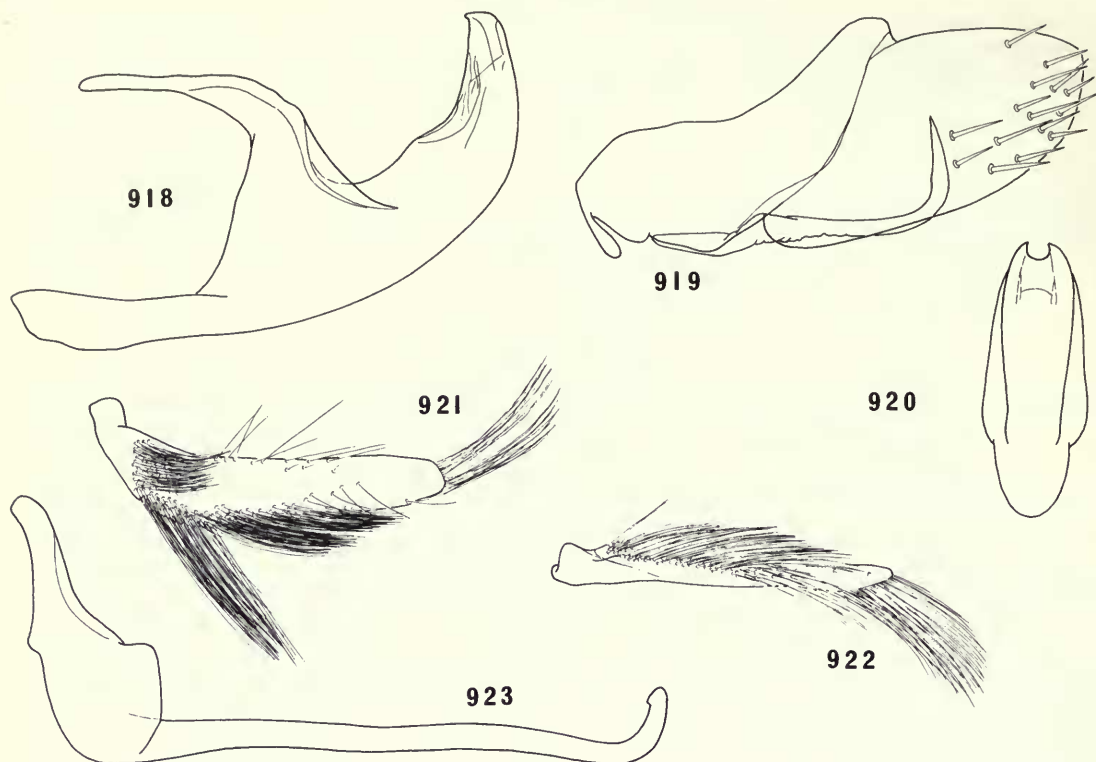
Length: ♂, 6.88–6.96 mm (mean 6.92 mm).

Vertex shorter medially than next eyes, equal in width to pronotum; forewings deeply punctate.

Male genitalia. Pygophore with lateral lobes extending more ventrally than normal; processes slender, directed posteriorly and turned abruptly dorsad just distad of midlength, apex acute. Subgenital plates elongate, slender, basal stem and lobe indistinct; a group of short hair-like setae laterally near base; a



Figs 912–917 *Batracomorphus thestor* (holotype). 912, 913, aedeagus; 914, pygophore; 915, style; 916, left subgenital plate, ventral view; 917, same, left lateral view. (For further explanation see ‘Techniques and methods’.)



Figs 918–923 *Batracomorpha leto*. 918, aedeagus; 919, pygophore; 920, aedeagus; 921, left subgenital plate, left lateral view; 922, same, ventral view; 923, style. (For further explanation see 'Techniques and methods'.)

multiseriate row of long hair-like setae along proximal two-thirds of ventral margin; two multiseriate parallel rows of long hair-like setae on distal two-thirds of medial surface, the more dorsal row approximately half length of more ventral one. Styles with apical process very long, slender, turned abruptly dorsad subapically, apex rounded. Aedeagus robust; shaft relatively short, directed dorsally; gonopore apical; anterior incision absent.

REMARKS. This species is closely related to *thestor*, the type-species of *Edijassus*, and is intermediate between it and the character states in *Batracomorpha* indicating the congeneric nature of the two genera. The two species differ not only in external characters but also in the shape of the pygophore processes, the position of the gonopore and the distribution of setae on the subgenital plates. The present species is known only from the Finisterre Mountains of New Guinea.

MATERIAL EXAMINED

Holotype ♂, **New Guinea**: Papua New Guinea, Madang District, Finisterre Mts, Damanti, 1082 m, 2–11.x.1964 (*M. E. Bacchus*) (BMNH).

Paratype. **New Guinea**: 1 ♂, Papua New Guinea (BMNH).

***Batracomorpha boschmai* Blöte**

(Figs 924–929)

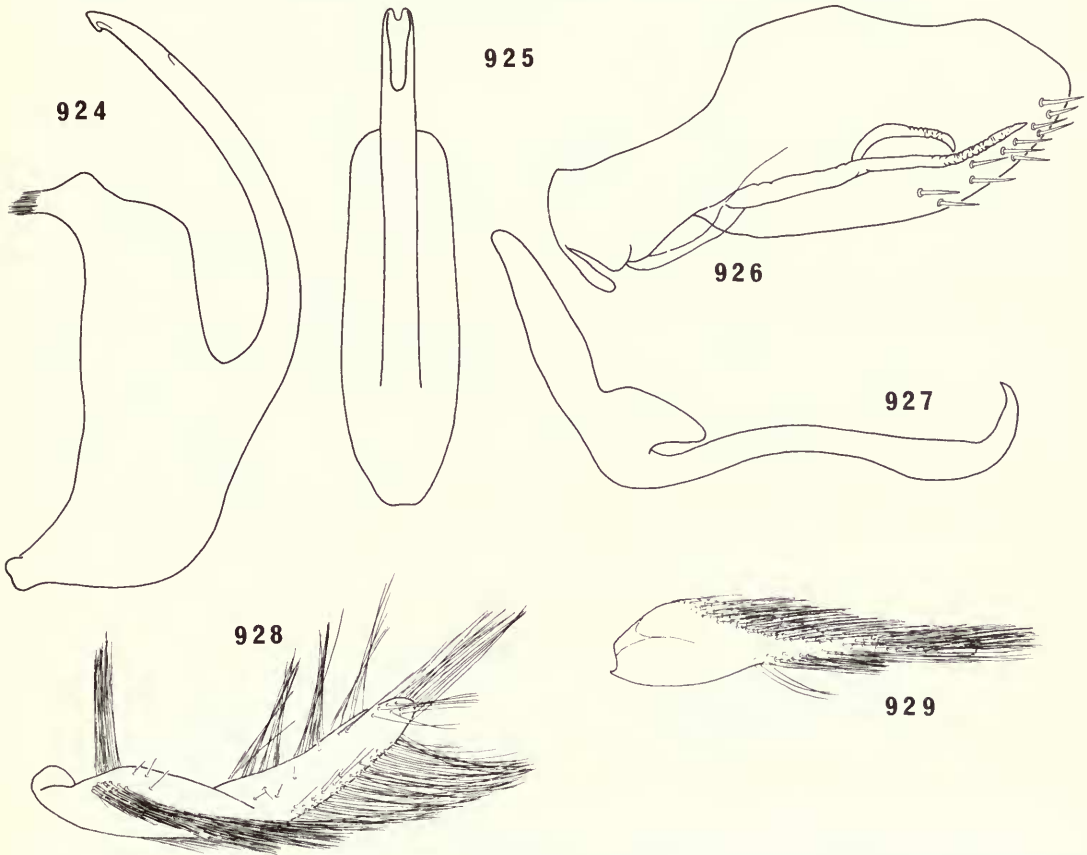
Batracomorpha boschmai Blöte, 1964: 467. Holotype ♂, **NEW GUINEA** (RNH) [examined].

Length: ♂, 7.00 mm.

Vertex with a small mark on each side midway between midline and eye and a series along anterior border of pronotum, red.

Vertex flat with anterior ridge.

Male genitalia. Pygophore with lateral lobes extending more ventrad than normal; processes slender, directed posteriorly, apical third crenulate, apex acute, a short slender process arising mesally near its midlength and directed posteriorly for approximately one-fourth length of main process, its apex acute and turned ventrally. Subgenital plates with basal stem and lobe indistinct; a group of long hair-like setae dorsolaterally at base; a multiseriate row of long setae laterally over basal half, becoming ventrolateral over distal half; a multiseriate row of long setae ventrally, commencing slightly distad of lateral row and paralleling it; a multiseriate row of long setae along distal half of dorsomesal margin. Styles with apical process elongate, slender, of approximately uniform width, slightly expanded distad of midlength and tapering to acute upturned apex. Aedeagus simple, enlarged basally; shaft slender, directed dorsally and turned anterodorsally near base; gonopore extending approximately one-sixth length of shaft; anterior incision very short.



Figs 924–929 *Batracomorphus boschmai* (holotype). 924, 925, aedeagus; 926, pygophore; 927, style; 928, left subgenital plate, left lateral view; 929, same, ventral view. (For further explanation see 'Techniques and methods'.)

REMARKS. This species resembles the previous two in the shape of its style and the following seven in the shape of its aedeagus. It may be readily distinguished from all these, however, in having the pygophore processes bifid.

DISTRIBUTION. New Guinea.

MATERIAL EXAMINED

Batracomorphus boschmai Blöte, holotype ♂, New Guinea: Araboebivak, 6.x.1939 (RNH).

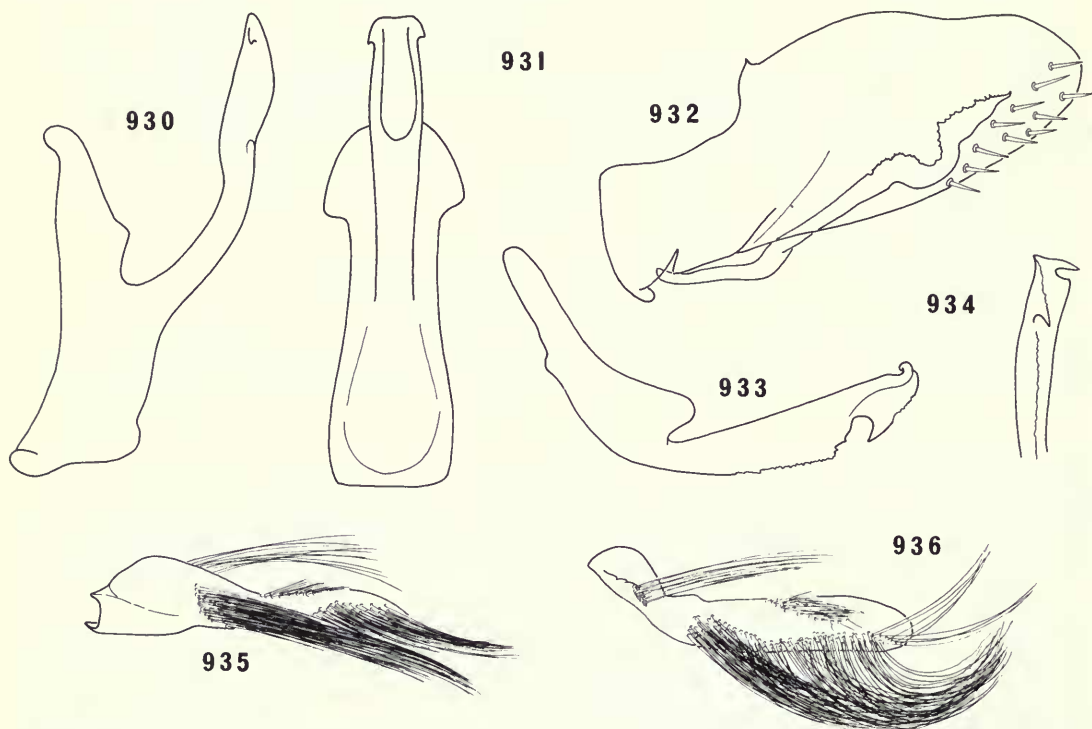
Batracomorphus semele sp. n.

(Figs 930–936)

Length: ♂, 5.44 mm.

Vertex flattened.

Male genitalia. Pygophore with lateral lobes extending more ventrad than normal; processes robust, directed dorsoposteriorly, sinuate over apical half and terminating in triangular expansion, dorsal margin irregularly serrate over distal half. Subgenital plates with basal stem and lobe indistinct; a multiserial row of long hair-like setae along ventrolateral margin over distal three-fourths; a small group of similar setae laterally near base and another group of slightly shorter setae slightly more distad on medial margin; a group of much shorter setae on dorsolateral margin immediately distad of midlength. Styles with apical process expanding towards apex over basal two-thirds and then tapering rapidly to acute mesally directed apex, ventral margin acuminate and minutely serrate to near apex; a lamellate ventrally directed acute expansion subapically on ventral margin. Aedeagus robust basally; shaft slender, directed dorsally, slightly expanded over distal half and terminating in a pair of small lateral barbs; gonopore extending one-third length of shaft; anterior incision absent.



Figs 930–936 *Batracomorphus semele*. 930, 931, aedeagus; 932, pygophore; 933, style; 934, style apex, ventral view; 935, left subgenital plate, ventral view; 936, same, left lateral view. (For further explanation see 'Techniques and methods'.)

REMARKS. This species is one of a group of seven (*semele*, *nitens*, *hermes*, *xanthus*, *briseis*, *artemis* and *iris*) which are characterised by having the vertex flattened, the pygophore lobes extending more ventrad than normal, the subgenital plates densely setose with the basal stem and lobe indistinct, the apical process of the styles abruptly narrowed distally and with a pronounced subapical expansion or process ventrally, and the aedeagus simple, slender and without an anterior incision. The species in this group, which occurs in New Guinea and New Britain, resemble *anubis* from New Guinea in the shape of the aedeagus and pygophore but differ in the subgenital plates and styles. The styles resemble those of *otus*, *melampus* and *hector* from West Malaysia but the two groups differ considerably in the shape of the aedeagus,

subgenital plates and pygophore as well as the vertex. The present species differs from all others in the group in having sinuate and dorsally serrate pygophore processes and the shaft of the aedeagus arising more dorsally from the socle.

MATERIAL EXAMINED

Holotype ♂, **New Guinea**: Papua New Guinea, Madang District, Finisterre Mts, Damanti, 1082 m, 2–11.x.1964 (*M. E. Bacchus*) (BMNH).

***Batracomorphus nitens* Blöte**

(Figs 937–940)

Batrachomorphus nitens Blöte, 1964: 466. Holotype ♂, **NEW GUINEA** (RNH) [examined].

Length: ♂, 5.5 mm.

Vertex flattened.

Male genitalia. Pygophore processes slender, directed posteriorly, turned slightly ventroposteriorly distally, slightly expanded subapically then tapering to acute apex. Subgenital plates as in *boschmai* but without the shorter mesoventral row of setae; dorsal group at base slightly larger, its setae clubbed apically and variable in length, the longest reaching to apex of plate; a few long setae on laterodorsal edge of basal lobe. Styles with apical process expanding towards midlength then abruptly narrowed to arched distal half and terminating in acute dorsally hooked apex, a finger-like ventrally directed projection subapically on ventral margin, ventral margin minutely dentate at midlength. Aedeagus simple; shaft slender, directed dorsally and terminating in a pair of small lateral lobes; gonopore extending approximately one-sixth length of shaft; anterior incision absent.

REMARKS. The present species is most closely related to *hermes* from New Guinea but differs in having the apical expansions on the shaft of the aedeagus relatively smaller, the gonopore shorter and the posterior margin of the socle without a projection. The apical process of the style is also constricted more basally, is dentate ventrally at midlength and has the subapical projection situated more distad and longer than the more apical portion of the process. (See additional remarks under *semele*.)

DISTRIBUTION. New Guinea.

MATERIAL EXAMINED

Batrachomorphus nitens Blöte, holotype ♂, **New Guinea**: Araboebivak, 4.x.1939 (RNH).

***Batracomorphus hermes* sp. n.**

(Figs 941–944)

Length: ♂, 5.28 mm.

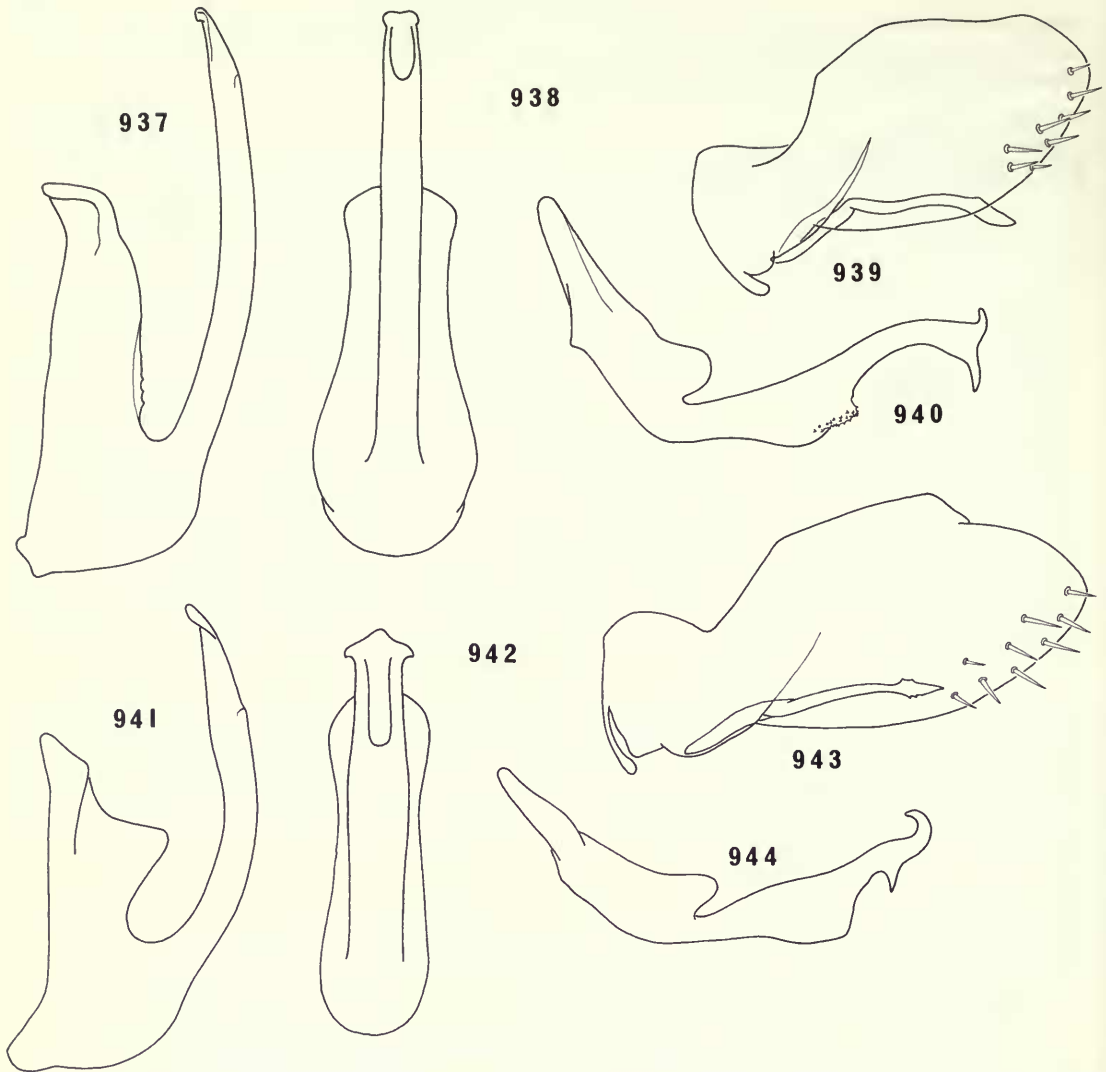
Vertex flattened.

Male genitalia. Pygophore processes slender, directed posteriorly, slightly expanded subapically and barbed, apex acute. Subgenital plates as in *semele* but ventrolateral multiseriate row of hair-like setae over distal three-fourths also extending over ventromesal margin, group of short setae on dorsolateral margin immediately distad of midlength long and hair-like on basal half of group, and group of setae on medial margin at base missing. Styles with apical process expanded markedly to midlength then abruptly narrowed to slender dorsomesally hooked apex, a triangular ventrally directed projection on ventral margin immediately distad of midlength. Aedeagus simple; socle with conical projection on its posterior margin; shaft slender, directed dorsally, terminating in a pair of lateral barb-like expansions; gonopore extending approximately one-fourth length of shaft; anterior incision absent.

REMARKS. The present species is most closely related to *nitens* from New Guinea but differs as described under that species (See additional remarks under *semele*.)

Material examined

Holotype ♂, **New Guinea**: Irian Jaya, Humboldt Bay District, Bewani Mts, 400 m, vii.1937 (*W. Stüber*) (BMNH).



Figs 937–944 937–940, *Batracomorpha nitens* (holotype). (937, 938) aedeagus; (939) pygophore; (940) style. 941–944, *B. hermes*. (941, 942) aedeagus; (943) pygophore; (944) style. (For further explanation see 'Techniques and methods'.)

***Batracomorpha xanthus* sp. n.**

(Figs 945–950)

Length: ♂, 4.96–5.44 mm (mean 5.21 mm).

Vertex flattened.

Male genitalia. Pygophore processes slender, directed posteriorly with apical third turned abruptly ventrally, tapering to apex with latter turned dorsoposteriorly, with two short lateral projections subapically, the more basad one longer than other. Subgenital plates as in *semele* but with ventrolateral multiseriate row of hair-like setae extending onto ventral half of mesal surface along entire length of row and along dorsomesal margin over apical third of plate, and dorsolateral group of shorter setae near midlength absent. Styles with apical process expanding to midlength then narrowing to acute dorsomesally hooked apex, ventral margin acutely ridged and minutely serrate at midlength, a long ventrally directed dagger-like projection subapically on ventral margin. Aedeagus simple; shaft slender, directed dorsally,

terminating in a pair of lateral barb-like expansions; gonopore extending approximately one-fourth length of shaft; anterior incision absent.

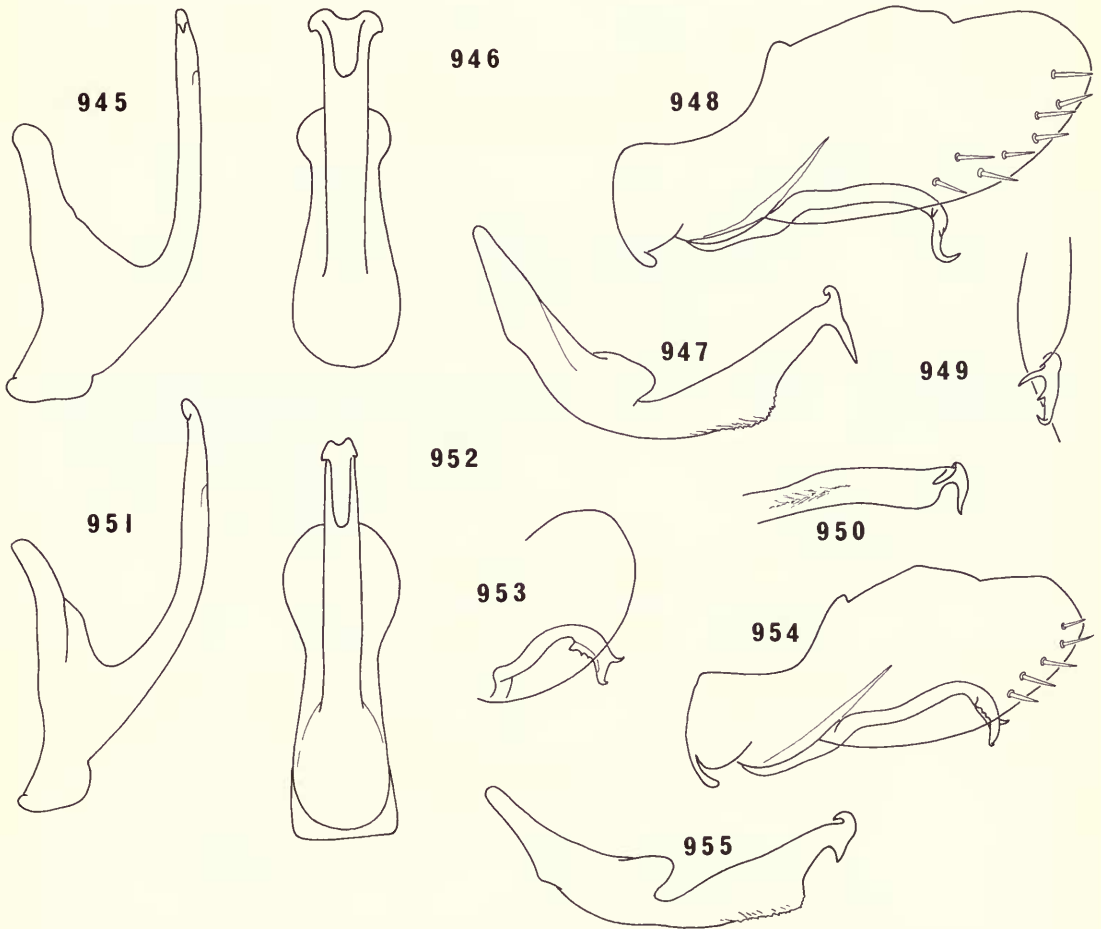
REMARKS. The New Britain specimens of this species have the apical process of the style abruptly narrowed, almost vertically, and the distal neck-like portion very short.

The present species is most closely related to *briseis* from New Guinea but differs in having the subapical projection on the style much longer, the apical barb-like expansions on the shaft of the aedeagus relatively larger and the pygophore processes with two thorn-like projections laterally on distal third rather than ridged and without a subapical spur mesally. (See additional remarks under *semele*.)

MATERIAL EXAMINED

Holotype ♂, **New Guinea:** Papua New Guinea, Madang District, Finisterre Mts, Damanti, 1082 m, 2-11.x.1964 (*M. E. Bacchus*) (BMNH).

Paratypes. **New Guinea:** 4 ♂, same data as holotype (BMNH). **New Britain:** 8 ♂ (BPBM).



Figs 945-955 945-950, *Batracomorphus xanthus* (New Guinea specimens). (945, 946) aedeagus; (947) style; (948) pygophore; (949) left pygophore lobe and process, posterior view; (950) left style, ventral view. 951-955, *B. briseis*. (951, 952) aedeagus; (953) left pygophore lobe and process, posterolateral view; (954) pygophore; (955) style. (For further explanation see 'Techniques and methods'.)

***Batracomorphus briseis* sp. n.**

(Figs 951–955)

Length: ♂, 4.88 mm.

Male genitalia. Pygophore processes slender, directed posteriorly, apical third turned abruptly ventrally, tapering to acute apex, lateral margin of apical third acutely ridged and slightly dentate, a small subapical spur-like spine on mesal margin. Subgenital plates as in *xanthus*. Styles with apical process expanding towards midlength then abruptly narrowed to acute dorsomesally hooked apex, ventral margin acuminate and minutely dentate at midlength; a small ventrally directed triangular expansion subapically. Aedeagus simple; shaft slender, directed dorsally, terminating in a pair of small lateral barb-like expansions; gonopore extending approximately one-fourth length of shaft; anterior incision absent.

REMARKS. The present species is one of a group of seven characterised by the shape of the vertex and male genitalia, as described under *semele*. It differs from the others, however, in having the vertex rounded rather than flattened. It is most closely related to *xanthus* from New Guinea and New Britain but differs as described under that species.

MATERIAL EXAMINED

Holotype ♂, New Guinea: Papua New Guinea, Kokoda, 365 m, ix.1933 (*L. E. Cheesman*) (BMNH).

***Batracomorphus artemis* sp. n.**

(Figs 956–960)

Length: ♂, 5.20 mm.

Vertex flattened.

Male genitalia. Pygophore processes slender, directed posteriorly, turned ventroposteriorly at midlength and then laterally, apex acute and turned posteriorly, a small spur-like projection on dorsal margin just basad of apex. Subgenital plates as in *xanthus*. Styles with apical process slightly expanded over midlength, its ventral margin acutely ridged, tapering gradually to acute dorsomesally hooked apex; a short ventrally directed dagger-like projection subapically on ventral margin. Aedeagus simple; shaft slender, directed dorsally, terminating in a pair of small lateral barb-like lobes; gonopore extending approximately one-third length of shaft; anterior incision absent.

REMARKS. The present species is one of a group of seven characterised by the shape of the vertex and male genitalia as described under *semele*. It differs from the majority in the group, however, in having the apical process of the style only slightly expanded and gradually narrowed to the apex. It is most closely related to *iris* from New Guinea but differs in having a pronounced subapical projection on the style, a much smaller subapical projection on the dorsal margin of the pygophore process, and the shaft of the aedeagus more slender in posterior aspect and with a pair of small apical lobes.

MATERIAL EXAMINED

Holotype ♂, New Guinea: Papua New Guinea, Morobe District, Herzog Mts, Vagau, 1219 m, 4–17.i.1965 (*M. E. Bacchus*) (BMNH).

***Batracomorphus iris* sp. n.**

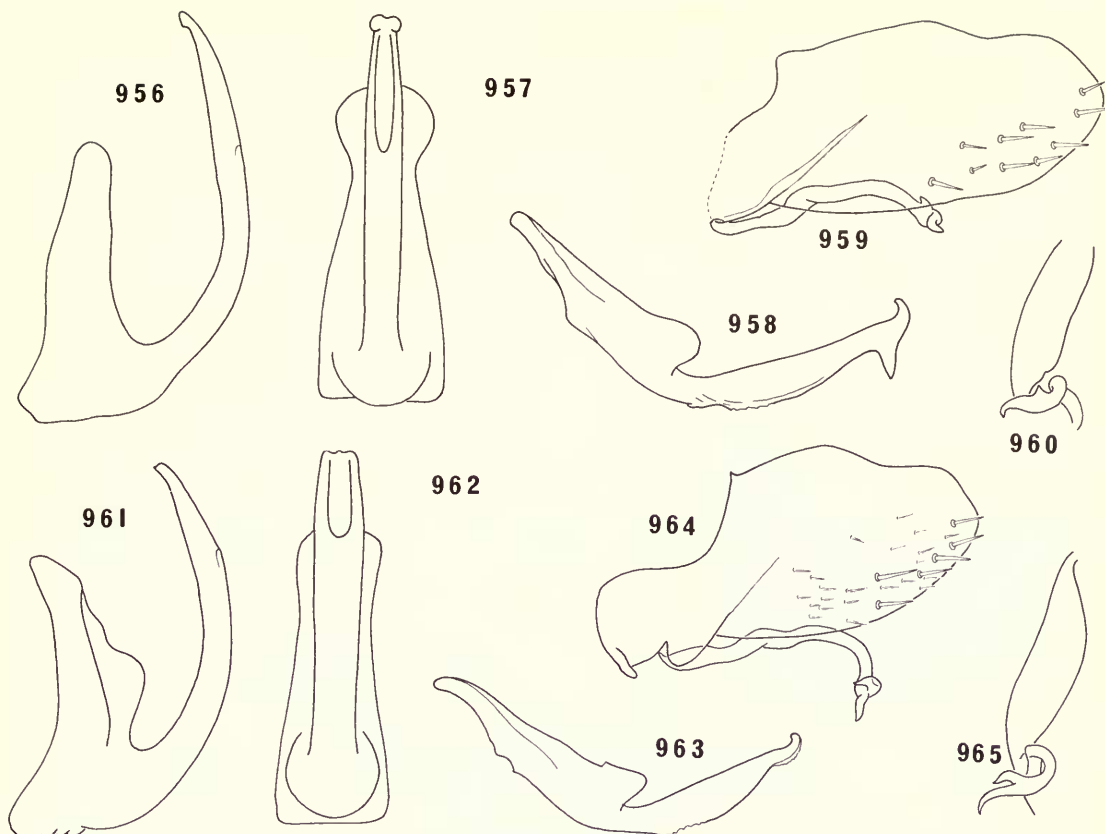
(Figs 961–965)

Length: ♂, 4.80 mm.

Vertex flattened.

Male genitalia. Pygophore processes slender, directed posteriorly, turned ventrally at midlength then laterally, apex acute and turned ventrally, a short laterally directed finger-like projection on dorsal margin just basad of apex. Subgenital plates as in *semele* but dorsolateral group of setae at midlength long and hair-like and ventrolateral multiserial row extending over ventromedial surface. Styles with apical process slightly expanded over midlength, its ventral margin acutely ridged, tapering gradually to acute dorsomesally hooked apex. Aedeagus simple; shaft slender, directed dorsally; gonopore extending approximately one-fourth length of shaft; anterior incision absent.

REMARKS. The present species is one of a group of seven characterised by the shape of the vertex and male genitalia as described under *semele*. It differs from the majority in the group, however,



Figs 956–965 956–960, *Batracomorpha artemis*. (956, 957) aedeagus; (958) style; (959) pygophore; (960) left pygophore lobe and process, posterior view. 961–965, *B. iris*. (961, 962) aedeagus; (963) style; (964) pygophore; (965) left pygophore lobe and process, posterior view. (For further explanation see ‘Techniques and methods’.)

in having the apical process of the style only slightly expanded and gradually tapered to the apex. It is most closely related to *artemis* from New Guinea but differs as described under that species.

MATERIAL EXAMINED

Holotype ♂, **New Guinea**: Papua New Guinea, Madang District, Finisterre Mts, Damanti, 1082 m, 2–11.x.1964 (*M. E. Bacchus*) (BMNH).

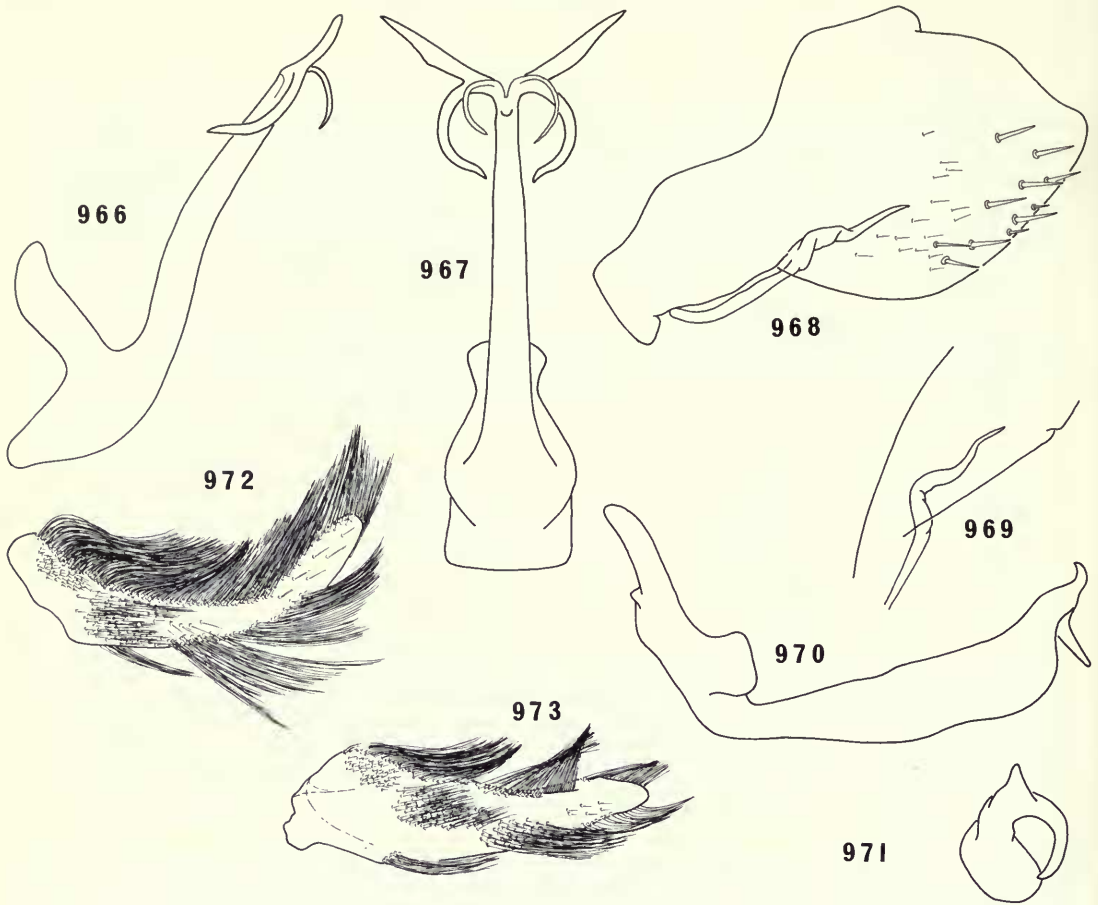
Batracomorpha telamon sp. n.

(Figs 966–973)

Length: ♂, 5.84 mm.

Vertex flattened.

Male genitalia. Pygophore processes short, slender, directed dorsoposteriorly, sinuate in posterior aspect, apex acute. Subgenital plates with basal stem and lobe indistinct; a dense multiseriate row of long hair-like setae along dorsal margin, distal half of ventral margin and distal region of medial margin; a group of shorter setae laterally just basad of midlength; a group of short spine-like setae laterally at base; a small isolated group of long hair-like setae medially near base. Styles with apical process expanding distally and narrowing abruptly subapically to acute dorsally hooked apex; an elongate heavily chitinised projection arising subapically on mesal margin and curving medially and then ventrally. Aedeagus with shaft slender, elongate, directed dorsally and turning posterodorsally, terminating in three pairs of elongate processes, a divergent dorsolaterally directed pair, a ventrally directed pair curving towards midline of shaft, and a shorter more slender similarly curving posterior pair; gonopore small, apical; anterior incision short.



Figs 966–973 *Batracomorphus telamon*. 966, 967, aedeagus; 968, pygophore; 969, left pygophore lobe and process, posterior view; 970, style; 971, same, posterior view; 972, left subgenital plate, left lateral view; 973, same, ventral view. (For further explanation see 'Techniques and methods'.)

REMARKS. This species is closely related to *enyo* from New Guinea but differs in having three pairs of apical processes on the aedeagus instead of one, the gonopore much smaller, the apical process of the style abruptly narrowed subapically rather than at its midlength, and the head narrower rather than wider than the pronotum. Both species resemble *rhesus* from the Philippines and the *lavinia*-group from Borneo, New Guinea, New Britain and Australia in the presence of apical processes on the aedeagus but differ from all these in having the subgenital plates densely pubescent and without a distinct basal stem.

MATERIAL EXAMINED

Holotype ♂, **New Guinea**: Papua New Guinea, Madang District, Finisterre Mts, Damanti, 1082 m, 2–11.x.1964 (*M. E. Bacchus*) (BMNH).

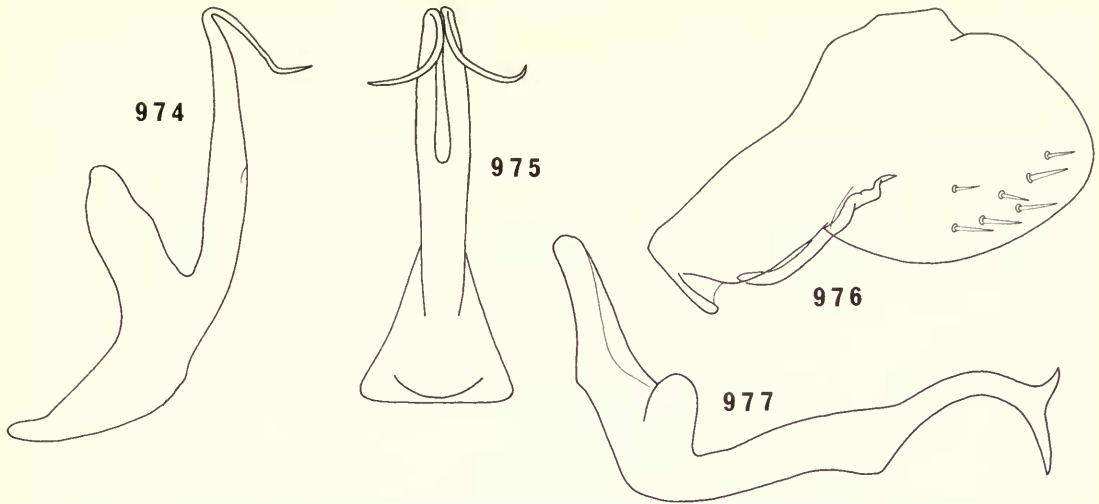
***Batracomorphus enyo* sp. n.**

(Figs 974–977)

Length: ♂, 5.20 mm.

Head slightly wider than pronotum, vertex flattened.

Male genitalia. Pygophore processes very short, slender, membranous, sinuate, directed dorsoposteriorly, apex acute. Subgenital plates as in *telamon*. Styles with apical process of approximately uniform width to midlength then abruptly narrowed to more slender arched distal half, terminating in an acute



Figs 974–977 *Batracomorphus enyo*. 974, 975, aedeagus; 976, pygophore; 977, style. (For further explanation see ‘Techniques and methods’.)

dorsally directed apex; an elongate ventrally directed dagger-like projection subapically on ventral margin. Aedeagus with shaft slender, directed dorsally, terminating in a pair of filamentous divergent processes directed ventrally approximately one-third length of shaft and with apices turned posteriorly; gonopore extending to near midlength of shaft; anterior incision very short.

REMARKS. This species is closely related to *telamon* from New Guinea but differs as described under that species. The resemblance between these two species and others in the genus is discussed under *telamon*.

MATERIAL EXAMINED

Holotype ♂, **New Guinea**: Papua New Guinea, Morobe District, Herzog Mts, Vagau, 1219 m, 4–17.i.1965 (*M. E. Bacchus*) (BMNH).

Nomina dubia

The following species, although congeneric, could not be adequately diagnosed owing to absence of authentically associated males or unavailability of type-specimen.

buxtoni (Osborn, 1934a: 168) (*Bythoscopus*). Holotype ♀, SAMOA: Upolu, Malololelei, 610 m, 25.xi.1924 (*P. A. Buxton & G. H. Hopkins*) (BMNH) [examined]. **Comb. n.**

citrinus (Evans, 1935: 76) (*Eurinoscopus*). Holotype ♀, AUSTRALIA: A.C.T., on *Casuarina*, 25.iii.1931 (*J. Evans*) (AM) [examined]. **Comb. n.**

coriaceus (Walker, 1870: 324) (*Jassus*). Holotype (abdomen missing), MYSOL (*Wallace*) (BMNH) [examined].

divergens (Schmidt, 1926: 253) (*Bythoscopus*). Type ♂, BURU: Station IX, 30.vi.1921 (depository unknown) [not examined]. **Comb. n.**

hyalinus (Osborn, 1934a: 169) (*Bythoscopus*). Holotype ♀, SAMOA: Tutuila, 366 m, 21.vii.1918 (*Kellers*) (depository unknown) [not examined]. **Comb. n.**

osborni (Metcalf, 1966: 74) (*Iassus*). [Unnecessary replacement name.]

laticeps (Osborn, 1934a: 168) (*Bythoscopus*). Holotype ♀, SAMOA: Tutuila, 274–366 m, centre of island, 30.vi.1918 (*Kellers*) (depository unknown) [not examined]. **Comb. n.**

maculipennis (Stål, 1870: 740) (*Macropsis*). Holotype ♀, PHILIPPINES: (NR) [examined]. **Comb. n.**

molestia (Kirkaldy, 1906: 348) (*Eurinoscopus*). Holotype ♀, AUSTRALIA: Queensland, Cairns, viii.1904 (BPBM) [examined].

montaguei (Distant, 1920: 467) (*Bythoscopus*). Holotype ♀, NEW CALEDONIA: Houadou, 30.x.1914 (*P. D. Montague*) (BMNH) [examined].

pallidus (Evans, 1935: 75) (*Eurinoscopus*). Holotype ♀, AUSTRALIA: Tasmania, Hobart (*Lea*) (AM) [examined].

- pelamys* (Kirkaldy, 1906: 349) (*Eurinoscopus*). Holotype ♀, AUSTRALIA: N.S.W., Sydney, i.1905 (Koebele) (BPBM) [examined].
- pelias* (Kirkaldy, 1906: 348) (*Eurinoscopus*). Holotype ♀, AUSTRALIA: N.S.W. (Koebele) (BPBM) [examined].
- rex* Blöte, 1964: 467 (*Batrachomorphus*). Holotype ♂ (abdomen missing), NEW GUINEA: Araboebivak, 4.x.1939 (RNH) [examined].
- rubrofrontalis* (Distant, 1908b: 192) (*Bythoscopus*). Type ♀, INDIA: Kotagiri (BMNH) [examined]. **Comb. n.**
- soboles* (Kirkaldy, 1906: 348) (*Eurinoscopus*). Holotype ♀, AUSTRALIA: Queensland, Cairns, viii.1904 (BPBM) [examined]. **Comb. n.**
- sontiates* (Kirkaldy, 1906: 347) (*Eurinoscopus*). Type ♀, AUSTRALIA: Queensland, Cairns, viii.1904 (BPBM) [examined].
- tenuis* Evans, 1972: 654 (*Batrachomorphus*). Holotype ♀, NEW GUINEA: Mt Kaindi, 2400 m, 27.i.1963 (J. Sedlacek) (BPBM) [not examined].
- torensis* Evans, 1972: 654 (*Batrachomorphus*). Holotype ♀, NEW GUINEA: River Tor (mouth), Maffen, 2.viii.1959 (T. C. Maa) (BPBM) [not examined].
- translucidus* (Evans, 1941: 145) (*Eurinoscopus*). Holotype ♀, AUSTRALIA: Western Australia, Dedari, 64 km W. of Coolgardie, 11–21.i.1936 (R. E. Turner) (BMNH) [examined].
- tutuilanus* (Osborn, 1934a: 166) (*Bythoscopus*). Holotype ♀, SAMOA: Tutuila, 326 m, eastern end of island, 21.vi.1918 (Kellers) (depository unknown) [not examined]. **Comb. n.**
- viridipes* (Distant, 1908a: 99) (*Bythoscopus*). Type ♀, AUSTRALIA: Queensland, Townsville, 14.v.1903 (F. P. Dodd) (BMNH) [examined].
- viridis* (Evans, 1935: 75) (*Eurinoscopus*). Type (abdomen missing), AUSTRALIA: Adelaide, 6.xii.1934 (J. Evans) (AM) [examined].
- walkeri* (Metcalf, 1966: 93) (*Iassus*). [Replacement name for *Bythoscopus unicolor* Walker, 1870: 320.] **Comb. n.**
- unicolor* (Walker, 1870: 320) (*Bythoscopus*). Type ♀, SULAWESI: Makasar (Wallace) (BMNH) [examined]. [Junior primary homonym of *Bythoscopus unicolor* Fitch, 1851.]

Nomen nudum

testaceus (Merino, 1936: 391) (*Bythoscopus*). This nomen nudum is included within *Batrachomorphus* in view of the context in which it was originally cited.

References

- Blocker, H. D. 1979. The Iassinae (Homoptera: Cicadellidae) of the Western Hemisphere. *Journal of the Kansas Entomological Society* **52**: 1–70.
- Blöte, H. C. 1964. On some New-Guinean *Batrachomorphus* species (Hemiptera, Jassidae). *Zoologische Mededelingen* **39**: 464–470.
- Claridge, M. F. & Reynolds, W. J. 1972. Host plant specificity, oviposition behaviour and egg parasitism in some woodland leafhoppers of the genus *Oncopsis* (Hemiptera Homoptera: Cicadellidae). *Transactions of the Royal Entomological Society of London* **124**: 149–166.
- Claridge, M. F., Reynolds, W. J. & Wilson, M. R. 1977. Oviposition behaviour and food plant discrimination in leafhoppers of the genus *Oncopsis*. *Ecological Entomology* **2**: 19–25.
- Claridge, M. F. & Wilson, M. R. 1976. Diversity and distribution patterns of some mesophyll-feeding leafhoppers of temperature woodland canopy. *Ecological Entomology* **1**: 231–250.
- 1978a. Oviposition behaviour as an ecological factor in woodland canopy leafhoppers. *Entomologia Experimentalis et Applicata* **24**: 101–109.
- 1978b. Seasonal changes and alternation of food plant preferences in some mesophyll-feeding leafhoppers. *Oecologia* **37**: 247–255.
- Distant, W. L. 1908a. On some Australian Homoptera. *Annales de la Société entomologique de Belgique* **52**: 97–111.
- 1908b. Rhynchota – Vol. IV. Homoptera and Appendix (Pt.). In: *The Fauna of British India, including Ceylon and Burma*. 501 pp. London.
- 1914. Homoptera (Membracidae and Jassidae) collected in the Lagos district by W. A. Lamborn. *Transactions of the Entomological Society* **1914**: 515–520.
- 1920. Rhynchota from New Caledonia. *Annals and Magazine of Natural History* (9) **6**: 456–470.

- Evans, F.** 1981. The Tartessinae of Australia, New Guinea and some adjacent islands (Homoptera: Cicadellidae). *Pacific Insects* **23**: 112–188.
- Evans, J. W.** 1935. The Bythoscopidae of Australia (Homoptera, Jassoidea). *Papers and Proceedings of the Royal Society of Tasmania* **1935**: 61–83.
- 1940. Some Queensland leaf-hoppers (Jassoidea, Homoptera) that attack Lucerne. *Proceedings of the Royal Society of Queensland* **52**: 10–13.
- 1941. New leaf-hoppers (Homoptera, Jassoidea) from Western Australia. *Journal of the Royal Society of Western Australia* **27**: 143–163.
- 1966. The leafhoppers and froghoppers of Australia and New Zealand (Homoptera: Cicadelloidea and Cercopoidea). *Memoir of the Australian Museum, Sydney* **12**: 1–347.
- 1972. Some leafhoppers from New Guinea, Australia and Thailand belonging to the subfamily Jassinae and a new genus from New Guinea referred to a new subfamily, the Acostemminae (Homoptera: Cicadellidae). *Pacific Insects* **14**: 647–662.
- 1974. New Caledonian leafhoppers and the systematic position of *Kosmiopelix* Kirkaldy and *Euacanthella* Evans (Homoptera: Cicadelloidea). *Pacific Insects* **16**: 165–175.
- Eyles, A. C. & Linnavuori, R.** 1974. Cicadellidae and Issidae (Homoptera) of Niue Island, and material from the Cook Islands. *New Zealand Journal of Zoology* **1**: 29–44.
- Gressitt, J. L.** 1961. Problems in the zoogeography of Pacific and Antarctic insects. *Pacific Insects Monograph* **2**: 1–94.
- Hepner, L. W.** 1966a. Twenty new species of *Erythroneura* related to *E. bigemina* (Homoptera: Cicadellidae). *Journal of the Kansas Entomological Society* **39**: 78–89.
- 1966b. New species of *Erythroneura* related to *lenta* (Homoptera: Cicadellidae). *Florida Entomologist* **49**: 95–100.
- 1966c. New species of *Erythroneura* related to *campora* (Homoptera: Cicadellidae). *Florida Entomologist* **49**: 101–106.
- 1966d. New species of *Erythroneura* (Cicadellidae) related to *inepta*. *Journal of the Georgia Entomological Society* **1**: 1–5.
- 1967a. New species of *Erythroneura* related to *E. dira* (Homoptera: Cicadellidae). *Journal of the Kansas Entomological Society* **40**: 17–24.
- 1967b. New species of *Erythroneura* (Homoptera: Cicadellidae). *Entomological News* **78**: 59–73.
- 1972. New species of *Erythroneura* (Homoptera: Cicadellidae). *Florida Entomologist* **55**: 267–272.
- 1976. Fifteen new species of *Erythroneura* (*Erythridula*) (Homoptera, Cicadellidae) II. *Florida Entomologist* **59**: 293–300.
- 1977. Fifteen new species of *Erythroneura* (*Erythridula*) (Homoptera, Cicadellidae) VIII. *Journal of the Georgia Entomological Society* **12**: 359–365.
- 1978. Sixteen new species of *Erythroneura* (*Erythridula*) (Homoptera, Cicadellidae) VII. *Journal of the Kansas Entomological Society* **51**: 131–139.
- Kirby, W. F.** 1900. Hemiptera, Homoptera, Mallophaga, Neuroptera and Orthoptera. In Andrews, C. W. *A Monograph of Christmas Island (Indian Ocean): Physical Features and Geology*. 337 pp. London.
- Kirkaldy, G. W.** 1906. Leaf-hoppers and their natural enemies (Pt. IX. Leaf-Hoppers – Hemiptera). *Bulletin of the Hawaiian Sugar Planters Association* **1**: 267–479.
- 1907. Leaf-hoppers – Supplement (Hemiptera). *Bulletin of the Hawaiian Sugar Planters Association* **3**: 1–186.
- Knight, W. J.** 1965. Techniques for use in the identification of leafhoppers (Homoptera: Cicadellidae). *Entomologist's Gazette* **16**: 129–136.
- 1974. Leafhoppers of New Zealand: subfamilies Aphrodinae, Jassinae, Xestocephalinae, Idiocerinae, and Macropsinae (Homoptera: Cicadellidae). *New Zealand Journal of Zoology* **1**: 475–493.
- 1976. The leafhoppers of Lord Howe, Norfolk, Kermadec, and Chatham Islands and their relationship to the fauna of New Zealand (Homoptera: Cicadellidae). *New Zealand Journal of Zoology* **3**: 89–98.
- Kramer, J. P.** 1963. A key to the New World genera of Iassinae with reviews of *Scaroidana* and *Pachyopsis* (Homoptera: Cicadellidae). *Bulletin of the Brooklyn Entomological Society* **58**: 37–50.
- Lethierry, L.** 1892. Liste d'Hemiptères récoltés à Mahé (Inde) par M. Em. Deschamps. *Bulletin de la Société Zoologique de France* **17**: 207–210.
- Lewis, R. H.** 1834. Descriptions of some new Genera of British Homoptera. *Transactions of the Entomological Society* **1**: 47–52.
- Linnavuori, R.** 1956. A revision of some of Stål's and Spangberg's Cicadellid types. *Suomen Hyönteis-tieteellinen Aikakauskirja* **22**: 170–181.

- 1957. Remarks on the Iassinae (Hom. Cicadellidae). *Suomen Hyönteistieteellinen Aikakauskirja* **23**: 144–150.
- 1960a. Homoptera: Cicadellidae. *Insects of Micronesia* **6**: 225–344.
- 1960b. Cicadellidae (Homoptera, Auchenorrhyncha) of Fiji. *Suomen Hyönteistieteellinen Seura* **15**: 1–71.
- Linnavuori, R. & Quartau, J. A.** 1975. *Etudes du Continent Africain*. Fascicle 3. Revision of the Ethiopian Cicadellidae (Hemiptera – Homoptera); Iassinae and Acroponinae. 170 pp. Bruxelles.
- Maramorosch, K. & Harris, K. F.** (Eds) 1979. *Leafhopper vectors and plant disease agents*. 654 pp. New York.
- Matsumura, S.** 1912. Die Acocephalinen und Bythoscopininen Japans. *Journal of the College of Agriculture, Tohoku Imperial University* **4**: 279–325.
- Melichar, L.** 1903. *Homopteren-Fauna von Ceylon*. 248 pp. Berlin.
- Merino, G.** 1936. Philippine Cicadellidae (Homoptera). *Philippine Journal of Science* **51**: 307–400.
- Metcalf, Z. P.** 1946. Fulgoroidea and Jassoidea of Guam. *Bernice P. Bishop Museum Bulletin* **189**: 105–148.
- 1966. *General Catalogue of the Homoptera*. Fascicle 6 Cicadelloidea. Part 15 Iassidae. 229 pp. Washington, D.C.
- Nast, J.** 1972. *Palaeartic Auchenorrhyncha (Homoptera) an annotated check list*. 550 pp. Warszawa.
- Nielson, M. W.** 1968. The leafhopper vectors of phytopathogenic viruses (Homoptera, Cicadellidae). Taxonomy, biology, and virus transmission. *Technical Bulletin United States Department of Agriculture* no. 1382, 386 pp.
- 1975. A revision of the subfamily Coelidiinae (Homoptera: Cicadellidae). Tribes Tinobregmini, Sandersellini and Tharrini. *Bulletin of the British Museum (Natural History)* (Entomology) Supplement 24, 197 pp.
- 1977. A revision of the subfamily Coelidiinae (Homoptera: Cicadellidae). II Tribe Thagriini. *Pacific Insects Monograph* **34**, 218 pp.
- 1982. A revision of the subfamily Coelidiinae (Homoptera: Cicadellidae). IV Tribe Coelidiini. *Pacific Insects Monograph* **38**, 318 pp.
- Osborn, H.** 1934a. Insects of Samoa and other Samoan terrestrial arthropoda. Hemiptera – Cicadellidae (Jassidae). Part II, Fascicle 4, pp. 163–192. London.
- 1934b. Cicadellidae of the Marquesas Islands. *Bernice P. Bishop Museum Bulletin* **114**: 239–269.
- Quartau, J. A.** 1981a. Ecological notes on *Batracomorphus* Lewis (Insecta, Homoptera, Cicadellidae) in Africa. *Boletim da Sociedade Portuguesa de Entomologia* **14**: 1–8.
- 1981b. New and redescribed species of Africa *Batracomorphus* Lewis (Homoptera: Cicadellidae), with a key to all known Ethiopian species. *Memoirs of the Entomological Society of Southern Africa* no. 14: 1–134.
- Ross, H. H.** 1957. New oak-inhabiting species of *Erythroneura* from Illinois (Hemiptera, Cicadellidae). *Entomological News* **68**: 183–190.
- Schmidt, E.** 1926. Fauna Buruana. Homoptera. *Treubia* **7**: 217–258.
- Stål, C.** 1870. Hemiptera insularum Philippinarum – Bidrag till Philippinska öarnes Hemipter-fauna. *Öfversigt af Kongl. Vetenskaps-Akademiens Förhandlingar* no. 7: 607–776.
- Walker, F.** 1870. Catalogue of the homopterous insects collected in the Indian Archipelago by Mr A. R. Wallace, with descriptions of new species. *Journal of the Linnean Society (Zoology)* **10**: 276–330.

Index

Invalid names are in *italics*.

- | | |
|---------------------|---------------|
| acestes 162 | ammon 116 |
| <i>Acojassus</i> 31 | anchises 180 |
| acrisius 121 | ancus 60 |
| adrastus 188 | angustatus 51 |
| adventitosus 60 | antenor 167 |
| aeneas 145 | anubis 80 |
| agenor 142 | ares 91 |
| ajax 71 | artemis 202 |
| alceus 165 | ascanus 114 |
| alcides 180 | atreus 76 |

- atrifrons 51
 bacchusi 78
Batracomorphus 30
 boschmai 196
 briareus 56
 briseis 202
 brooksi 186
 buxtoni 205

 caeneus 55
 calliope 73
 camillus 86
 capaneus 136
 catiline 75
 ceres 144
 charis 56
 charybdis 53
 cheesmanae 99
 chlorophana 103
 chryseis 81
 circe 78
 citrinus 205
 cloelia 83
 cocles 62
 coeus 156
 collinus 53
 coriaceus 205
 cossus 99
 cronos 121
 curvatus 86
 cybele 78
 cynus 177
 cyprian 188

 daedalus 88
 dardanus 144
 daunus 137
 deiphobus 58
 dido 148
 diomede 175
 divergens 205
 dolon 115
 dryas 60
 dymas 191

Edijasus 31
 elegans 99
 elissa 92
 enyo 204
 erato 115
 eriphyle 150
 eryx 132
 eumenides 182
Eurinoscopus 30
 evander 104

fasciatus 193

 ganymede 90
 geryon 161
 gressitti 68

 hamadryas 65
 harpago 122
 harpalyce 112
 hebrus 71
 hecate 65
 hector 121
 hecuba 71
 helenus 73
 hera 144
 hermes 199
 hesione 70
 hesperides 150
 hyalinus 205

 icarus 85
 ilia 62
 ilioneus 111
 ilus 92
 inachus 59
 indicus 86
 io 68
 iris 202
 itys 108
 iulus 178
 ixion 129

 janus 182
 jove 138
 juno 125
 juturna 95

 laertes 135
 laodamia 189
 laomedon 72
 laticeps 205
 latinus 133
 latona 66
 lavinia 170
 leda 159
 lentiginosus 193
 leto 194

 maculatus 53
 maculipennis 205
 maia 129
 manlius 66
 Marquardtella 29
 melampus 119
 memnon 83
 menelaus 172
 mettus 132
 misenus 165
 molestia 205
 molus 148
 montaguei 205

montanus 158
musaeus 143

nabirensis 141
nereus 184
nitens 199
notulatus 151
numa 139
numitor 128

ogasawarensis 186
orcus 68
orestes 152
orion 146
orithyia 167
osborni 205
Ossana 30
othrys 173
otus 119

palamedes 137
palicus 65
palinurus 180
pallas 174
pallidus Evans, Edijassus 194
pallidus Evans, Eurinoscopus 205
pandarus 109
pelamys 206
pelias 206
pellucidus 53
pelops 106
pentheus 56
peteos 107
pictus 97
pilumnus 129
portunus 135
priam 83
procne 102
procris 92
proserpine 155
protesilaus 109
proteus 90
punctatus Evans 51
punctatus Kirby 127
pustulatus 165
pyrrhus 150

remus 192
rex 206
rhea 137
rhesus 101
romulus 105
rorida 117
rubrofrontalis 206

sabinus 171
samii 176
sarpedon 62
semele 198
serranus 109
sibyl 93
silvanus 104
soboles 206
sontiates 206

tarchon 75
tarpeia 132
tarquin 66
tatius 146
telamon 203
tenuis 206
tereus 168
testaceus Merino 206
teucer 112
Thalattoscopus 29
thalia 157
theseus 97
thestor 194
thetis 162
thoas 152
tithonus 95
tityos 164
torensis 206
torquatus 75
torrevillasi 82
translucidus 206
triton 158
troilus 117
tullus 186
turnus 152
tutuilanus 206
tydeus 89
tyndareus 130

ufens 169
unicolor 206

vesta 182
virbius 141
viridinervis 160
viridipes 206
viridis 206
viridoflavus 95

walkeri 206

xanthus 200

zeus 175